Exhibit C

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISON

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OHIO PUBLIC EMPLOYEES :
RETIREMENT SYSTEM on Behalf :
of Itself and All Others :
Similarly Situated, :
:
Plaintiff, :C.A. NO. 4:08-CV-00160
:
v. :
:
FEDERAL HOME LOAN MORTGAGE :
CORPORATION, a/k/a Freddie :
Mac, RICHARD F. SYRON, :
PATRICIA L. COOK, ANTHONY S. :
PISZEL, and EUGENE M. MCQUADE, :
:
Defendants. :

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DEPOSITION OF STEVEN P. FEINSTEIN, PHD, CFA
(Vol. 3)
Boston, Massachusetts 02110
Tuesday, November 14, 2017

REPORTED BY: Deanna J. Dean, RDR, CRR
JOB NO. 133207

Tuesday, November 14, 2017
9:42 a.m.

Deposition of STEVEN P. FEINSTEIN, PHD, CFA, held at the offices of Morgan, Lewis & Bockius, One Federal Street, Boston, Massachusetts 02110, before Deanna J. Dean, a Registered Professional Reporter, Registered Diplomate Reporter, Certified Realtime Reporter, and Notary Public of the State of Massachusetts.

A P P E A R A N C E S

MARKOVITS, STOCK & DEMARCO
Attorneys for Plaintiff
3825 Edwards Road
Cincinnati, OH 45209
BY: WILLIAM MARKOVITS, ESQ.

-and-

STRAUSS & TROY
Attorneys for Plaintiff
150 East 4th Street
Cincinnati, OH 45202
BY: RICHARD WAYNE, ESQ.
(appearing via speakerphone)

A P P E A R A N C E S (cont'd.)

MORGAN, LEWIS & BOCKIUS
Attorneys for Defendant Federal Home Loan Mortgage Corporation, a/k/a Freddie Mac
One Federal Street
Boston, MA 02110
BY: JASON FRANK, ESQ.
BY: LIZA HAYS, ESQ.

SIDLEY AUSTIN
Attorneys for Defendant Richard Syron
1501 K Street Northwest
Washington, DC 20005
BY: FRANK VOLPE, ESQ.

A P P E A R A N C E S (cont'd.)

ZUCKERMAN SPAEDER
Attorneys for Defendant Patricia Cook
100 East Pratt Street
Baltimore, MD 21202
BY: ALICIA SHELTON, ESQ.

MURPHY & MCGONIGLE
Attorneys for Defendant Anthony Piszel
1185 Avenue of the Americas
New York, NY 10036
BY: JAMES GOLDFARB, ESQ.

A P P E A R A N C E S (cont'd.)

DECHERT
Attorneys for Defendant Eugene McQuade
2929 Arch Street
Philadelphia, PA 19104
BY: CATHERINE WIGGLESWORTH, ESQ.

ALSO PRESENT:

Carlo Barbieri, Legal Video Specialist

Nikolai Caswell, Navigant Economics

David F. Marcus, PhD
Senior VP, Cornerstone Research

Howard Lindenberg, Esq.
Managing Associate General Counsel, Freddie Mac

P R O C E E D I N G S

THE VIDEOGRAPHER: This is the start tape labeled No. 1 of the videotaped deposition of Dr. Stephen Feinstein in the matter Ohio Public Employees Retirement System versus Federal Home Loan Mortgage Corporation, et al., in the court -- United States Court of the Northern District of Ohio, Case Action No. 4:08-CV-00160.

This deposition is being held at Morgan Lewis at One Federal Street in Boston, Mass., on 11/14/2017 at approximately 9:42 a.m.

My name is Carlo Barbieri from TSG Reporting Inc., and I'm the legal video specialist. The court reporter is Deanna Dean in association with TSG Reporting.

Will the counsel please introduce themselves.

MR. MARKOVITS: Bill Markovits, Markovits Stock & Demarco, on behalf of Ohio Public Employees Retirement System.

MR. FRANK: Good morning, everyone. Jason Frank from Morgan Lewis & Bockius on

behalf of Freddie Mac.

MS. HAYS: Liza Hays, also from Morgan Lewis, also on behalf of Freddie Mac.

MR. MARCUS: David Marcus with Cornerstone Research.

MR. LINDENBERG: Howard Lindenberg, Freddie Mac.

MR. GOLDFARB: James Goldfarb with Murphy & McGonigle for the defendant Anthony Piszel.

MR. VOLPE: Frank Volpe from Sidley Austin on behalf of Richard Syron.

MS. WIGGLESWORTH: Catherine Wigglesworth from Dechert LLP, appearing telephonically on behalf of Eugene McQuade.

MS. FELTON: Alicia Felton from Zuckerman Spaeder appearing for Patricia Cook.

MR. CASWELL: Nikolai Caswell from Navigant Consulting, appearing telephonically.

THE VIDEOGRAPHER: Will the court reporter please swear in the witness.

STEVEN P. FEINSTEIN, PHD, CFA

a witness called for examination by counsel for the Defendant, having been previously identified by the production of his driver's license and being first duly sworn by the Notary Public, was examined and testified as follows:

MR. FRANK: Good morning.

THE WITNESS: Good morning.

MR. FRANK: Before beginning the examination this morning, I'll just have a brief colloquy with counsel to put some stipulations on the record. Okay?

THE WITNESS: Sure.

MR. FRANK: Very good. Mr. Markovits, good morning.

MR. MARKOVITS: Good morning.

MR. FRANK: Can we agree today that the parties will reserve all objections except as to form and all motions of strike until the testimony is offered to the court?

MR. MARKOVITS: Yes.

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MR. FRANK: Can we also agree that the witness will have 30 days to review and sign the transcript under the pains and penalties of perjury and that no formal signing before a court reporter will be necessary, 30 days from the receipt of the final transcript?

MR. MARKOVITS: Yes.

MR. FRANK: And, finally, can we stipulate to the sufficiency of the notice of deposition and the subpoena and the credentials of the court reporter and videographer?

MR. MARKOVITS: Yes.

MR. FRANK: Very good.

EXAMINATION

BY MR. FRANK:

Q. Dr. Feinstein, you may recall that you've been deposed in these offices before. Correct?

A. Yes.

Q. You were deposed on two days previously. Right?

A. Yes.

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Q. Okay. And this is -- so this is the third day of your testimony here in this case. Right?

A. Yes.

Q. Okay. And you understand that -- strike that.

You relatively recently submitted a rebuttal report in this case. Correct?

A. Yes.

Q. What led to the development of that rebuttal report?

A. The receipt of two reports, one from Paul Gompers and the other from Dr. Bajaj. And request from counsel that I respond to those.

Q. And when you said "request from counsel," you gestured to Mr. Markovits. Correct?

A. Yes.

Q. Did someone from Mr. Markovits's firm or Mr. Markovits himself give you a task relating to the two reports that you just mentioned, the report from Dr. Bajaj and the report from Dr. Gompers?

A. Yes.

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Q. What was that task?

A. To write a response, a rebuttal report with my responses to the contents of those two defendants' experts' reports.

MR. FRANK: Okay. If we could mark this as the next exhibit, which is Exhibit No. 269.

(Exhibit 269 is marked for identification.)

MR. FRANK: Dr. Feinstein, if I could steal the exhibit from you for one moment so that I can show Ms. Hayes how they're being filled out.

If you could just put the number and date. She can put her initials on them later.

Thank you.

BY MR. FRANK:

Q. Dr. Feinstein, I'm showing you a document that's been marked as Exhibit 269.

What is Exhibit 269?

A. This is the rebuttal report that I wrote, and which I filed on October 16th of this year.

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Q. And this year is 2017. Correct?

A. Yes.

Q. Does this rebuttal report contain all of your opinions relating to Dr. Bajaj's report in this case?

A. No.

Q. Okay. How did you determine what opinions to include and what opinions to leave out?

A. Well, I tried to write a thorough response, including my responses to all of the opinions he expressed and all the arguments he rose.

However, subsequently after writing the report and actually while preparing for this deposition, I noticed one more argument that he buried in a footnote which I would have wanted to respond to in the report if I had -- if it had been more prominently displayed by Dr. Bajaj and I had noticed it sooner.

Q. And do you ever use footnotes in your reports?

A. Yes, but I usually don't bury what I would consider important arguments there.

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So either it's not an important argument which didn't merit response, but if anyone ever does consider it an important argument, then I would -- I can describe -- I can discuss my response to it here today.

Q. So you never put important arguments in your footnotes. Is that your testimony?

A. Right. If it's an important argument, I try to include it in the body of the report.

Q. And what is this argument that was in a footnote of Dr. Bajaj's report that you just referenced?

A. He referred to a serial correlation test. He said that a predicate matter -- that in order to test semi-strong informational efficiency, one should also do a test on weak-form efficiency. I disagree with that and I would have explained why, if I had noticed it sooner and if it had been more prominently presented by Dr. Bajaj.

Q. Okay. Are there any other opinions that you have relating to Dr. Bajaj's report that you did not include in your rebuttal

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report?

A. None that I can think of as I sit here right now. It's possible that something might arise in the course of the day today. I'll let you know. But as I sit here now, no.

Q. In connection with your preparation for your deposition, did you have an opportunity to review Dr. Bajaj's report?

A. Yes.

Q. And was that the first time that you reviewed Dr. Bajaj's report?

A. No.

Q. And in connection with your preparation for your deposition, did you identify any opinions that you have about Dr. Bajaj's report that you didn't include in your own report other than the opinion you just referenced?

A. No.

Q. Does your rebuttal report that's been marked as Exhibit 269 contain all of your opinions about Dr. Gompers' report?

A. Yes.

Q. As you sit here today, you're not

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aware of any opinions you have about Dr. Gompers' report that you didn't include in your rebuttal report?

A. No opinions. I mean, I might -- there are alternative ways of expressing my opinion in response to his report that aren't in this report, but no opinions.

Q. Do you believe you left anything out of your rebuttal report relating to Dr. Gompers' report?

A. No.

Q. And with the exception of the footnote issue you referenced a moment ago, do you believe you left anything out of your rebuttal report relating to Dr. Bajaj's report?

A. No. I mean I just want to emphasize that as I was preparing for the deposition, reviewing the documents and reading my report, it occurred to me that there may have been a clearer way of expressing some of my opinion -- one of my opinions in particular. But the opinion is the same.

Q. What is the opinion that you believe you could have expressed more clearly?

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A. That Dr. Gompers' entire report really is, the thrust of it, the meaning of it, what needs to be responded to is really presented in one sentence of his entire report, that he didn't really need 41 pages or 45 pages to say what he was trying to say, that there was one sentence that captured it. And my response to that one sentence reasonably could have been sufficient to respond to his report.

Q. Do you remember what the sentence was?

A. Yes. It's a sentence in paragraph -- it's paragraph 69 of his report.

Q. And do you -- that's where the sentence is, but do you remember the substance of the sentence?

A. Yes.

Q. What was the substance of the sentence?

A. He said that it would be -- that calculating damages in this case would be complex, and then in parentheses he wrote "if not impossible."

And I looked carefully to see does

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he ever say it's impossible. He doesn't. Not in his report and not in his deposition, either. He sidestepped the question when it was asked to him directly. He never says it's impossible. So his opinion is that it would be complex.

I'm not really disagreeing with that, but the substance that I agree with is that it's certainly possible. I mean, it's -- it would be -- it would be complex. It's not an easy task, but it's certainly doable.

That's how I would respond in once -- you know, I think responding to that one sentence is essentially all that needed to be responded to for Dr. Gompers. Calculating damages is possible. It's complex. But there are experts, including myself, that can do it.

Q. Anything else in your rebuttal report that you believe you could have, in retrospect, articulated more clearly?

A. No.

Q. Did you review your testimony in this case at any time following your depositions in this case?

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A. Yes.

Q. When was that?

A. Well, when I first got the transcript, and again in preparation for this deposition.

Q. You reviewed your two days of testimony twice?

A. Yes. Yes.

Q. Did you see anything that you -- in your testimony that you viewed as incorrect?

A. I don't recall that I did. I think there were -- there was a couple times that the word "float" was written as "flow." I don't recall anything of substance.

Q. Are you aware of any mistakes in your testimony that you believe you should correct?

A. No.

Q. Having reviewed your testimony, do you believe your testimony accurately reflected your opinions?

A. Yes.

Q. Other than this word "float" that may have been incorrectly written as "flow,"

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are you aware of any other transcription errors or typographical errors in your deposition transcript?

A. As I sit here now, no.

Q. Are you aware of anything that you said during your deposition in this case that was not accurately recorded by the stenographer, other than this word "float" versus "flow"?

A. I'm not.

Q. After your deposition in this case, did you perform any additional tests to assess market efficiency?

A. No.

Q. Did you perform any tests to check anything that was included by Dr. Bajaj in his report?

A. I recall asking my team to check to make sure that his computations were accurate. Aside from that, no.

Q. Did your team report back to you with respect to whether Dr. Bajaj's computations were accurate?

A. Right. They found no errors.

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Q. Your team found no --

A. I mean no computational errors. I mean, there's certainly conceptual errors, but no computational errors.

Q. Your team found no computational errors in Dr. Bajaj's work?

A. Correct.

Q. Did you limit your team as to what they could or should test in terms of computations in Dr. Bajaj's report?

A. Yes.

Q. In what way did you limit your team?

A. The tests as Dr. Bajaj constructed them and then executed them.

Q. Did you have your team check all of the tests that Dr. Bajaj constructed and executed?

A. Those that he reported. Just what he reported in his report.

MR. MARKOVITS: Jason, I'm going to object here. I've given some leeway on this, but as I understand it, the scope of this deposition is limited to his rebuttal report and any new opinions that he

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addresses in his rebuttal report. His work that he did subsequent to the prior -- last deposition or his review of the last deposition or anything he did that doesn't bear upon his opinions that are stressed on the rebuttal are not within the scope of this deposition.

I've given you some leeway. I'll continue to give you a little leeway. But if you could limit your questions to the scope of his rebuttal report. Thank you.

MR. FRANK: I've heard your objection. We don't agree with you. I don't believe the judge set a limitation on the scope of the deposition.

In any event, I believe that these questions are directly related to his rebuttal report and his opinions in them.

MR. MARKOVITS: Okay. If you read the judge's order, you'll see that she did limit the scope of the deposition. You can do that at a break. But if there are additional questions that go too deep along these lines, I'll object and instruct not

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to answer, consistent with the judge's order.

MR. FRANK: You can object as you wish.

BY MR. FRANK:

Q. Dr. Feinstein, did you include in your rebuttal report any mention of the computational accuracy of Dr. Bajaj's tests?

A. I don't believe that I did.

Q. Did you conduct any tests to assess anything said by Dr. Gompers in his report or at his deposition?

A. I don't think there was anything quantitative that needed to be checked. So, no.

Q. Now, let me turn your attention to Exhibit 2 to your rebuttal report.

A. So, actually, I have a question about that. There's two additional -- there's some unnumbered pages at the end of this report that I don't believe were included in the report. So Exhibit A has Exhibit 1, 2, and 3 repeated without -- without numbers, which would not have been part of the report.

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Q. Well, I will represent to you that we took this report off the court's dockets, and I understand that this was filed by counsel for OPERS. And so maybe it will make your life easier if you refer to the numbers at the top of the page which reflect the court filing.

And so why don't we right now turn to page 63 of 70. Do you see that, at the top of the page?

A. I do.

Q. And page 63 of 70 says "Exhibit 1." Correct?

A. Yes. That's right.

Q. And if you look at the bottom of the page, it says 59. Right?

A. Correct.

Q. Okay. And if you flip the page --

MR. GOLDFARB: Jason, would you accept that representation so there's no dispute that what he's looking is, in fact, at his report as filed and he accepted it as his report?

MR. FRANK: We'll get there. Thanks, James. We will.

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Q. And you see that -- if you flip the page, you'll see page 60 is also Exhibit 1. Correct?

A. Yes.

Q. And that's page 64 of 70. Right?

A. Correct.

Q. And then page 65 of 70 is Exhibit 2. Correct?

A. Yes.

Q. And then page 66 of 70 is Exhibit 3. Correct?

A. Yes.

Q. Okay. And then you see how page 67 of 70 is Exhibit 1 again. Do you see that?

A. Right. It's an exact duplicate. I can see that.

Q. And is Exhibit 2 that appears on page 69 of 70 an exact duplicate?

A. It is.

Q. Okay. And Exhibit 3 is an exact duplicate of the earlier Exhibit 3?

A. Right.

Q. Okay. Is it, do you have -- well, strike that.

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Do you accept that Exhibit 269 is your rebuttal report as filed by counsel for OPERS?

A. I have no reason to dispute that. It's just that there are some pages at the end that are replicated --

Q. Right.

A. -- redundantly included twice.

Q. You've just noticed that the exhibits at the end of your report were included twice. Is that correct?

A. That's right. Once with numbers, page numbers, once without.

Q. But you have no reason to believe that Exhibit 269 isn't your rebuttal report. Correct?

A. Correct.

Q. And, in fact, you actually believe that Exhibit 269 is your rebuttal report, except that its exhibits -- there are two sets of them. Correct?

A. That's accurate.

Q. All right. And so why don't we deal with the first set of exhibits. I know they're

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identical, but just so we're on the same literal page.

Page 63 of 70 is Exhibit 1. Do you see that?

A. I do.

Q. Okay. And do you see under "Case Documents," it says, "Deposition of Stephen P. Feinstein, PhD," dated 10 August 2017?

A. Yes.

Q. Now, I took your deposition on two days. Correct?

A. That's correct.

Q. Is it true that you only reviewed one of your deposition transcripts?

A. No. I reviewed both.

Q. Okay. And do you know why your -- this exhibit only identifies one of the transcripts?

A. No. I don't think it matters, given that it was described at the following week it was a continuation of the same deposition. But it should -- I can imagine it being presented both ways.

Q. Now, let me turn your attention to

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Exhibit 2. This is on page 65 of 70.

Do you see that?

A. Yes.

Q. Okay. And who prepared Exhibit 2?

A. My staff.

Q. Okay. And your staff is at your company. Right?

A. Yes.

Q. What's the name of your company again?

A. Crowninshield Financial Research, Inc.

Q. And how many employees are there of Crowninshield?

A. Eight.

Q. Now, the first matter listed on Exhibit 2 is In Re LSB Industries, Inc., securities litigation.

Do you see that?

A. Yes.

Q. And that's a securities case. Right?

A. Yes.

Q. And did you give deposition

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testimony relating to market efficiency in that case?

A. Yes.

Q. Any other subjects?

A. I don't recall. I'd have to see the report or the transcript. Most likely.

Q. In terms of?

A. Most likely it would have been the same material covered in this case, but that's most likely. To know for sure, I'd have to look at it.

Q. Do you know the amount of your bills in that case?

A. No.

Q. How much do you expect to be paid in connection with that case?

A. I have no idea.

Q. Is it over $100,000?

A. Like I said, no idea. I leave that to others at my firm.

Q. Do you have a sense of how much time you've spent on the LSB matter?

A. A sense. But I don't know with specific -- specificity.

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Q. What's your sense?
A. 40 to 60 hours would be typical.
Q. And are you charging your usual rates in that matter?
A. Yes.
Q. And what's your usual rate?
A. Well, it depends what year the case was initiated, what year the engagement letter was signed. Currently the rate is 875 an hour. In prior years, it was less. And the rates are held constant during the course of a case.
Q. Do you see it says "master file number 15-CV-" with a number of numbers?
A. I do.
Q. Do you understand that that 15 means that the case was filed in the year 2015?
A. I do.
Q. Okay. Do you know if you were retained in 2015 or later in the LSB matter?
A. Most likely it's later, but I don't know for sure. I'd have to see the engagement letter to know for sure.
Q. Do you know what your rate was in 2015?

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A. Just that it was less than it is now.
Q. Do you have a sense of how much time others at Crowninshield have spent on the LSB matter?
A. A sense, yes.
Q. What's your sense?
A. Typically it's a 3 to 1 ratio. About 3 hours of theirs to 1 of mine, maybe a little more for some cases.
Q. So that's approximately 120 to 180 hours?
A. Correct.
Q. And what are their rates?
A. They range from $90 an hour to 450 or in that vicinity.
Q. They range from $90 an hour to $450 an hour.
A. Right. Depending on the experience, credentials, rank of the person working on the case.
Q. Is there a typical amount that you get paid for a matter like LSB?
A. I mean, yes, although each case has

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its differences. Some are easier, some are harder, some are more time-consuming, some are less time-consuming. But there's a general range if someone calls and says -- asks the question before, you know, what's the ballpark range, I have a range I can give them.
Q. What is that range?
A. Well, it used to be in the neighborhood of $40,000 for a market efficiency. Now it's more in the 40 to 60,000, unless there are three depositions.
MR. MARKOVITS: Thank you, Jason.
A. I mean, sometimes there are no depositions and other times there are more.
Q. So do you expect to be paid somewhere around 40 to $60,000 for the LSB matter?
A. Well, also, that's up through -- that's up through writing the report. Then, you know, the deposition and preparation for deposition would be more, and if there's a rebuttal, there's additional hours. Yeah, I would say -- I mean, I don't know. I'd have to look at the records. But I think that's a fair

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initial estimate. And I think it's more than that because I think there was a rebuttal and additional work that was requested.
Q. So you tell potential clients or clients that an expected range in terms of expense is 40 to $60,000 through the writing of the report. Is that correct?
A. That's right.
Q. Do you give them an expected range through deposition and rebuttal report?
A. They rarely ask for it, but, I mean, I think sometimes I do.
Q. What's that expected range?
A. And it would be, like, double that amount, that same amount again. Devoting myself and the staff to a week or two weeks of intensive work on a case amounts to about that much money.
Q. That is 80 to $120,000?
A. For the total. For then through rebuttal.
Q. Are rebuttal reports the norm in securities cases?
A. Not always. More recently it's

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become more common.

Q. Do you know if there's a rebuttal report in the LSB matter?

A. I don't. I do know -- and I couldn't tell you which case, but I do know there are a couple of cases in this list -- maybe it was LSB -- where defendants read my report, heard my testimony, and chose to accept or stipulate to or concede market efficiency, that did happen recently.

Q. What case was that?

A. I'm not sure. I'm looking at this. I can tell you it wasn't ARCP and it wasn't Freddie Mac, obviously. But it could have been -- it wasn't Eletrobras, so that leaves in this list LSB, Resource Capital, and Insulet. It could be LSB or Resource Capital. Sometimes the cases settle before rebuttal.

Q. What are the total amount of fees that you expect in the in re Resource Capital Corp. Securities litigation?

A. I just don't know.

Q. And would you describe the LSB case as a typical case for you?

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A. I really would have to review it. You know, I came prepared here for this case. And in order to speak knowledgeably about LSB, I would have had to have reviewed the documents for that case, and I didn't do that before coming here today.

Q. As you sit here today, you don't recall whether the LSB case is a typical case for you or not?

A. I know that in recent months, and this list represents recent months, there have been some -- there's been a range of responses from defendants to my work and to plaintiffs' efforts, including conceding points, including settling cases.

Q. As you sit here today, you don't recall whether the LSB case is a typical case for you or not?

A. Correct.

Q. Now, let's take the most recent case here, the In Re Insulet Corporation securities litigation case. Do you see that?

A. I just want to -- let me -- just to be comprehensive for the record, what is

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occurring more commonly nowadays is defendants will accept market efficiency, and the rebuttal report will be about price impact rather than market efficiency.

And since price impact would not have been in my original report, the course -- the case takes a turn in a different direction. That's why it's hard to say which ones are typical and which ones are not. And that's been more common lately.

Q. Now, I see that every one of these cases in their name it says "securities litigation."

Do you see that?

A. I do.

Q. Okay. And I take it all of these cases are, in fact, securities litigation cases. Correct?

A. Yes.

Q. Okay. And every one of the six cases listed in Exhibit 2 is a case where you were retained to provide a -- an opinion on market efficiency. Correct?

A. Yes. At a minimum. Could be also

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damage model. Could also be loss causation. Could also be damages itself, and sometimes it could be to opine on price impact, either as a response to defendants or as an opening preemptive argument.

Q. In all six of these cases, you were asked to offer opinions on behalf of a plaintiff relating to their efforts to get a class certified. Is that correct?

A. That is my understanding, yes. Yes.

Q. Do you happen to recall whether or not -- strike that.

In the -- in all six of these cases, you've given deposition testimony. Correct?

A. Yes.

Q. Okay.

A. That's what the exhibit reflects.

Q. In the -- in re American Realty Capital Properties, Inc., securities litigation, you also gave testimony at an evidentiary hearing. Correct?

A. Correct.

Q. What was the nature of that evidentiary hearing?

A. Actually, it was very similar to the issues in this case. It was about market efficiency, about the collective test I used to assess market efficiency. And it was about -- well, what the judge was considering, and I guess what defendants wished to emphasize, was the relative importance of the fifth Cammer factor versus all the other factors. That's what the court testimony focused on.

Q. Was that a Daubert hearing?

A. I don't -- I don't think so. I don't think it -- I'm not sure. It may have been. It may not have been. I mean, if it was, it was ruled in my favor.

Q. To the extent that -- you just don't recall whether or not it was a Daubert hearing?

A. I think, as is sometimes typical, defendants may have just thrown the kitchen sink at the court. I think it was -- my understanding, as I sit here now, my recollection, which I want to just be clear is imperfect on cases that I didn't come here prepared to talk about, is that the issue was whether or not the court -- the class should be

certified, whether or not plaintiff satisfied their burden for certification with respect to market efficiency and the damage model.

Q. As you sit here today, you don't recall the American Realty Capital Properties securities litigation evidentiary hearing being a Daubert hearing. Correct?

A. Correct. I don't recall one way or the other. My focus was on the substance of the case.

Q. And because that went to an evidentiary hearing, did you get paid more than in the cases where you did not attend an evidentiary hearing?

A. Well, there's no different rate. The rate was fixed and the same rate, except for the travel time to and from New York City was at half time.

But there were more hours, obviously. There were hours we sat in court. There were hours I was on the stand. There were hours I prepared for the testimony.

Q. And you charged for those additional hours?

A. Yes.

Q. Is that also another 40 to $60,000 for something like that?

A. I don't recall.

MR. FRANK: He gives half rate on travel, Bill.

MR. MARKOVITS: Okay.

MR. FRANK: You should remember that.

MR. MARKOVITS: I will check over the bills.

Q. Now --

A. The reason why -- one reason why my recollection is imperfect is, one reason the firm exists is so there's a separation between the business part of the engagement and the research and creative research part of the business. There are others at the firm that take care of all of that stuff: collecting hours, invoicing, billing, and so forth. I don't do that.

Q. You don't handle what are commonly considered back-office tasks?

A. Correct. Other people at my firm

do. I review invoices before they go out and approve them to go out, but the preparation is someone else, someone else's responsibility.

Q. Now, this list relates solely -- solely to testimony provided since your June report. Correct?

A. Yes.

Q. It doesn't identify cases in which you've been retained since your June report. Correct?

A. Correct.

Q. In how many cases have you been retained this year but haven't yet provided testimony?

A. I don't know.

Q. Is it more than five?

A. Since June?

Q. Sure, since June.

A. I really don't know. I can tell you there's -- we're a well-known firm and there's fairly consistent flow of engagements. But I couldn't tell you whether it's two, three, or five or more. I just couldn't -- I don't know. There are other folks at the firm who prepare

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work project scheduling controls, and that's, again, not me. I mean, it's almost as if I work for them rather than they work for me, is how we discuss it.

Q. And these cases listed here, are these your only source of income other than your professorship?

A. Only material source. I mean, there's some minor sources.

Q. What are you referring to?

A. Occasionally I get a royalty check for some book chapters I wrote. Well, I mean, there's an LLC that owns some real estate that provides some income.

Q. Anything else?

A. No. Maybe. But as I sit here now, not that comes to mind.

Q. All right. Let's turn to page 13 of your rebuttal report, the exhibit that's before you.

A. Which page?

Q. 13.

A. Now you're referring to the page numbers at the bottom?

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Q. I'm sorry. We should be very clear about that. I was referring to the page numbers at the bottom. It's page 17 of 70.

A. Okay.

Q. Now, in paragraph 42, you refer to a case on which you worked called City of Sterling Heights General Employees Retirement System versus Prudential Financial Inc., et al.

Do you see that?

A. Yes.

Q. And you say -- in the sentence where you introduce that case, you say, "In fact, I performed a single event date event study in conjunction with the collective test in the Prudential matter for which the class was certified." Do you see that?

A. Yes.

Q. And you wrote that in response to Dr. Bajaj's criticism that you had never used a single event date event study to establish market efficiency. Is that correct?

A. Correct.

(Exhibit 270 is marked for identification.)

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BY MR. FRANK:

Q. Okay. I'm showing you a document that has been marked as Exhibit 270.

Do you recognize Exhibit 270?

A. I do.

Q. What is Exhibit 270?

A. This is my report in the Prudential matter.

Q. This is the report that you were referring to in paragraph 42 of your rebuttal report in this case?

A. Yes.

Q. Now, let me turn your attention to paragraph 86 in the Prudential report.

Well, strike that.

In paragraph 85, you write, "Of the five Cammer factors, the empirical factor was cited by the Cammer court as one of the most convincing ways to demonstrate efficiency."

Do you see that?

A. I do. And I want to emphasize it doesn't say it's the most important. It doesn't say that it's essential. What it says --

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MR. VOLPE: Objection. Nonresponsive.

MR. MARKOVITS: Will you allow him to finish?

A. What it says is that it's one of the most convincing ways is what the court said, and I included it because I agreed.

MR. VOLPE: Objection. Nonresponsive. Move to strike.

Q. Dr. Feinstein, I'm reserving motions to strike, but I'll just -- I'll just ask you to recall that if you don't answer my questions but rather you just insert whatever you'd like to say, the day is just going to be a much longer day.

I think my question was simply of the five Cammer factors, the empirical factor was cited by the Cammer court as one of the most convincing ways to demonstrate efficiency.

Do you see that?

A. I see it. And I do -- I will add because I did take an oath to give comprehensive answers, the whole truth, and -- I also saw that in my prior deposition it was

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important to provide context to answers I was giving you because oftentimes it would be -- my answers would be cited without that context to make it appear as if I was saying something I wasn't.

So I want to -- and in particular, with respect to this fifth Cammer factor, the argument seemed to have been made that I previously represented this factor to be the most important one.

So since we're on that topic, I want to point out that it does say and I do see that it says that the fifth Cammer factor is the most convincing or one of the most convincing. And I just want to point out that it doesn't say what you previously said I said it said, that it's the most important.

MR. VOLPE: Objection. Nonresponsive. Move to strike.

Q. You'll see in paragraph 86 that you wrote the following -- and please tell me whether you were telling the truth when you wrote this: "The empirical factor focuses on the essence of market efficiency, whereas the

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other four factors are indicators that generally signal market efficiency."

A. That is absolutely true. And what it means is that all of the factors have a role in assessing market efficiency.

Q. Now, you wrote in paragraph 87 that "I conducted two sets of empirical tests of the efficiency of the market for Prudential common stock."

Do you see that?

A. One moment.

Yes, I do.

Q. Now, you actually conducted an event study analysis in the Prudential case. Right?

A. On a single event. The traditional event study was a single event. The collective test was on a group of events, just as in Freddie Mac.

Q. Are you trying to mislead the court in this matter, Dr. Feinstein?

A. No.

MR. MARKOVITS: Objection.

Q. Now, please take a look at paragraph 96.

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A. Event selection?

Q. Yes.

A. Yes.

Q. Do you see there that you wrote, "A company's financial results and forecasts are among the most important considerations to investors assessing the value of its stock"?

Do you see that?

A. Yes.

Q. Was that statement true when you wrote it?

A. Yes.

Q. It's still true today?

A. Yes.

Q. You also wrote, "Consequently, such announcements typically contain material information that could cause the stock price to change."

Do you see that?

A. Yeah. And I do want to make sure it's on the record that you asked me these questions in the last deposition, so this is not really responsive to my rebuttal. These are the same questions you asked me before, and

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I gave answers to explain why the Freddie Mac case was unique and different from other cases, including the Prudential case.

In the Freddie Mac case, prior expert work by Dr. Bajaj and Dr. Holman analyzed and evaluated earnings announcements and debated about whether the news was mixed or such that there would be a statistically significant reaction elicited.

And I explained that Dr. Holman's analysis made sense to me, but I was going to proceed by staying out of that fray and look at a different set of events.

You asked me that last time, and I answered that last time.

Q. Have I ever asked you any questions about your Prudential report?

A. No. But you asked me about the importance of -- yes, you did by reference. You said, "In prior reports, you looked at earnings announcements."

And I said "Yes."

And you said, "In prior reports, you said these were among the most important news

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events."

And I said "Yes." So by reference, yes.

Q. Take a look at paragraph 97. Do you see that?

A. I do.

Q. There, you wrote, "Numerous well-known and highly regarded academic studies (for example, Beaver 1968, Bolin Brown 1968, Ball 1978, Watts 1978, Patell and Wolfson, 1984, and Ball and Kothari, 1991) have specifically examined stock price movements caused by earnings announcements and concur that earnings announcements are generally important information events."

Do you see that?

A. I do. And you --

MR. MARKOVITS: Excuse me. I'm going to object.

Can you tell me how this relates to his rebuttal report? How does that question relate to the opinions he's given in the rebuttal report? If you can explain that to me, I'll allow him to answer the

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question.

MR. FRANK: Are you instructing the witness not to answer?

MR. MARKOVITS: I will instruct the witness not to answer if you can't provide a link between the question and the scope of this deposition, which is limited to the opinions that he's given in the rebuttal report.

MR. FRANK: You will soon see, Mr. Markovits, that the statement in his rebuttal report was terribly misleading, and it was misleading because of what he has said here relating to corporate announcements and what he actually tested. And you'll soon see how very misleading that was.

If your expert wishes to mislead the court, that's his prerogative, but I'm allowed to correct it and show the court exactly what he's doing.

MR. MARKOVITS: That's a link. I'll accept your representation. I will not accept that he is misleading the court in

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any respect, and I'd appreciate it if you would avoid the pejoratives in your questioning.

Thank you.

MR. FRANK: In fairness, Mr. Markovits, I don't think I've used any pejoratives in my questioning. I may have in my explanation as to --

MR. MARKOVITS: No. You have in your questioning as well, but the record will reflect that.

Go ahead.

BY MR. FRANK:

Q. I believe that my last question was whether you saw the quote I just read on paragraph 97.

Do you see that?

A. Yeah, I do. And I certainly see it and you can add to the list that earnings announcements have also been examined by Dr. Holman and Dr. Bajaj in this case.

MR. VOLPE: Objection. Nonresponsive.

Q. Now, in paragraph 98-- now, did --

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strike that.

With respect to paragraph 97, do you still stand by what you said in paragraph 97?

A. Yes.

Q. Okay. Now, with respect to paragraph 98, you wrote, "Consequently, a pattern of greater stock price movement on earnings and guidance announcement days as compared to all other days is indicative of market efficiency."

Do you see that?

A. I do.

Q. Do you still believe that?

A. Yes.

Q. Now, in paragraph --

A. Just -- it's -- but don't take that out of context. There are situations where if there's not a pattern of greater stock price movement on earnings and guidance dates, it's not indicative of market inefficiency.

So seeing that information moves the price on the earnings and guidance days is a demonstration of market efficiency. But the opposite is not true, such that if there's not

significantly bigger movement on earnings and guidance days, especially when a reason is offered and apparent, that that would indicate market efficiency. And that's what I explained in the prior deposition and in my writing.

Q. Now, in paragraph 99, you write, "Earnings announcements and guidance changes took place on the following dates during the class period."

Do you see that?

A. Yes.

Q. Okay. And you list there seven dates on which there were earnings announcements or guidance changes. Is that correct?

A. Right.

Q. Now, those seven dates, did you test those dates in this -- in connection with your work on the Prudential report?

A. In the context of a collective test, not in the context of a traditional event study focused on individual events, which is exactly what I said in my two prior reports in the Freddie Mac case.

Q. Let me turn your attention to paragraph 116. Do you see in paragraph 116 you write, "As shown in Exhibit 7, the respective stock price reactions were significant at the 95 percent confidence level on six of the seven earnings and guidance announcement event dates"?

A. That's a collective test. This is a -- yes. And this is the -- in the context of a collective test.

Q. Is it your --

A. It's described as a collective test in the report.

Q. Is it your view that Dr. Holman performed a collective test in this case?

A. No.

Q. Well, he tested multiple dates, didn't he?

A. He did.

Q. So --

A. But his evaluation was on an individual basis, not on -- I don't believe he ran a binomial test or a test to determine what I present in paragraphs 119 and 120 of this

test -- of this report for paragraph 121 and 122.

Q. Let me turn your attention to paragraph 120. You write, "Given that six of the seven event dates were indeed statistically significant, we can conclude that Prudential stock did respond to the news disseminated on earnings and guidance announcement dates demonstrating market efficiency throughout the class period."

Do you see that?

A. I do.

Q. Was that a collective test?

A. Yes.

Q. How was that different than Dr. Holman's test where he tested six dates and concluded that because two of the six dates were statistically significant that he demonstrated market efficiency?

A. I'll explain, but you need to listen.

It's in paragraph 119. 119 states, under the hypothesis and -- well, let's back up.

I'm going to read all of 119 because that's where it's explained. "Under the null hypothesis that Prudential stock does not behave any differently on earnings and guidance announcement dates and on ordinary days, there would be only a 5 percent probability that any such event would elicit a statistically significant stock price reaction at the 95 percent confidence level. Under this hypothesis that the stock price behaves no differently on earnings and guidance announcement days than on ordinary days, the probability that six of seven such events would be statistically significant" --

I just want to interject. So I'm analyzing them collectively.

-- "which was the result observed in this case would be approximately 1 in 10 million."

So what I'm doing here is I calculate from the binomial distribution a specific probability of observing this collective result. In fact, that's what I say next in paragraph 119.

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"This cumulative probability is assessed using a binomial distribution" --

So there's your distinction from what Dr. Holman did. Back to the text.

-- "computing the likelihood of six out of seven positive results of individual statistical significance where a positive result has a probability of 5 percent and a negative result has a probability of 95 percent."

So I concluded that six of seven indicated that the stock reacts to information by examining the seven events collectively. That's not what Dr. Holman did.

Q. What did Dr. Holman do?

A. He provide to -- he provided reasons for each individual result. He said -- between his opening report and his rebuttal, he said that two were significant and that four were not and the four that were not were not because the news was mixed on those days.

So he was analyzing them from a news perspective, on an individual -- on an event-by-event basis, whereas I did not pick

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these events because I observed any particular earnings announcement date as being momentous news. I picked them because the literature says generally earnings announcement dates have great information flow. And then I evaluated them collectively. I evaluated the result collectively.

Q. Where in your Prudential report does it say that you selected these dates because generally earnings dates have greater information flow?

A. Okay. I mean, it's what we were reading before with the quotes from Kothari and such.

Here.

MR. MARKOVITS: I think you were reading before from paragraph 97. That's the Kothari reference.

THE REPORTER: Could we go off the record for a second?

MR. FRANK: Sure.

MR. MARKOVITS: Let's take a break.

THE VIDEOGRAPHER: The time now is 10:38. We're off the record.

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(Recess taken from 10:38 to 10:53 a.m.)

THE VIDEOGRAPHER: The time now is 10:53. We're on the record.

(Exhibit 271 is marked for identification.)

BY MR. FRANK:

Q. Dr. Feinstein, I'm showing you a document that's been marked as Exhibit 271.

MR. MARKOVITS: Jason, before we finished, I thought he was sort of in the middle of an answer or he was going to look for a response to your question about earnings announcement dates conveying information.

MR. FRANK: The record's a little muddled. I think you jumped in and pointed him to a paragraph, and then we went off the record. We can return to that, or if you have questions for him you can certainly ask them at the end.

Q. Dr. Feinstein, do you have Exhibit 271 before you?

A. I do. So you don't want me to -- I

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mean, it was paragraph 88 and 117 that has the answer to your prior question.

Q. Okay.

A. I do have this exhibit, yes.

Q. Thank you. Okay.

Exhibit 271, what is Exhibit 271?

A. This appears to be -- maybe you can help me what the pronunciation -- the amici curiae that I coauthored for the Halliburton case. Amici curiae brief, brief of financial economist as amici curiae in support of respondents.

Oh, wait. This is not -- might not be the one I coauthored.

No, this is not the one I coauthored. I'm sorry. There is one I coauthored. This is not that one.

Q. Okay. So let's just be clear. So Exhibit 271, we can agree, is a brief of financial economist as amici curiae in support of respondents in the Halliburton case before the Supreme Court. Correct?

A. Yes. Yes.

Q. Okay. And you were just looking at

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the -- on pages 1 and 2 for the lists of the -- of the particular amici, the friends of the court, and you don't see your name there. Correct?

A. Correct. Right.

Q. But you do see Eugene Fama's name there. Right?

A. Correct.

Q. Who is Dr. Fama?

A. He is a professor who has written some seminal works on market efficiency.

Q. Now, let me turn your attention to page 4 of this brief.

A. Yes.

Q. Do you see in the middle of the page it says, "Eugene Fama's seminal work in this area distinguished among three different types of efficiency."

Do you see that?

A. I see that.

Q. It says, "Weak-form efficiency means that historical prices are not predictive of future prices. Excess profits cannot be earned using strategies based on historical prices."

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Do you see that?

A. I see that, yes.

Q. Do you agree with that definition of weak-form efficiency?

A. The choice of words is very important here, because even Professor Fama has written that serial correlation is not inconsistent with market efficiency and that some element of predictiveness is also consistent with market efficiency.

Fama himself has written on the subject, as have Richard Roll, Stephen LeRoy, Campbell, Lo, and MacKinlay, John Campbell from Campbell, Lo, and MacKinlay.

So the thought leaders in the field now understand that there's been progress since Eugene Fama's earliest seminal work in the area, which is referred to here, that weak -- that serial correlation and some element of predictiveness can have explanations that are perfectly consistent with market efficiency.

So I would have to say that I do agree that Eugene -- what's written here, that Eugene Fama's seminal work in this area

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distinguished among three different types of market efficiency and that Eugene Fama's earliest work in the area stated weak-form efficiency means that historical prices are not predictive of future prices. And that if its weak-form efficient, excess profits cannot be earned using strategies based on historical prices.

But since this 1970 work, particularly work in the '80s and '90s showed that the discipline understands that it's -- there are important exceptions, and in fact, the exceptions are such that serial correlation and predictiveness do not indicate market efficiency.

Q. Well, let's break that down a little bit.

Is it correct to say that Eugene Fama's seminal work in this area distinguished among three different types of market efficiency?

A. Yes.

Q. Okay. Were those three different types of market efficiency weak-form

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efficiency, semi-strong form efficiency, and strong-form efficiency?

A. Yes.

Q. Are the terms "weak-form efficiency," "semi-strong form efficiency," and "strong-form efficiency" commonly used by economists to discuss different types of market efficiency?

A. Yes.

Q. Do you sometimes use these terms to discuss market efficiency?

A. Yes.

Q. Now, according to Dr. Feinstein, what is weak-form efficiency?

A. Weak-form efficiency refers to a particular information set that the market is -- that the market is efficient with respect to. And that information set would be past prices and volume data.

Q. Is that information set public information?

A. Past prices and volume data is public information, yes. But it's an example -- well, I'll wait for your questions

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on it.

Q. What is, according to Professor Feinstein, semi-strong form efficiency?

A. Efficiency with respect to a different information set, that information set being all public information.

Q. The weak-form efficiency information set is public information regarding past prices and volume data?

A. That's right.

Q. Is that a subset of the semi-strong form efficiency information set?

A. Well, that's where the area is not as black and white as it used to be.

Yes, it's true that past prices and volume are public information. But it is possible -- I mean, the taxonomy, Fama's taxonomy does recognize that the market can be efficient with respect to some information but not other information.

And so it's therefore possible that the market can be efficient with respect to a company's statements; representations, either false or true; its earnings announcements; its

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financial performance; behavior of the sector, for example, while still allowing for some potential minute inefficiency in the past stock prices and volume that can only be detected with the most powerful and creative statistical tests, and which -- I'll leave it at that.

I mean, so the best analogy for explaining this and for teaching it when I've taught it is that it's certainly possible for there to be unusual ripples on the surface of the ocean or on the surface of a lake that are hard to explain or perhaps are anomalous. But that would not prove that a 30-foot rogue wave has no impact on a fishing boat that gets capsized by the wave.

So it's possible for the market to be efficient with -- and demonstrably efficient with respect to the information that's relevant in a securities case while still indicating some predictiveness or anomalous pattern in high-frequency ripples that are essentially meaningless.

Q. That was a long answer. So let me try to --

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A. It's a complicated subject and requires some explanation. A short answer would have been insufficient.

Q. Well, maybe it won't. I want you to work with me on this because I want to get you down on the record, because I think it's important.

A. I am on the record on this topic. I've written on the topic. I've testified in other cases on this topic.

Q. What have you written on this topic?

A. Other -- I've written reports in, for example, the AIG case -- in response to Dr. Bajaj, actually -- about serial correlation.

Q. Outside of the litigation context, have you written on this topic?

A. No.

Q. Now, let me see if I understand your answer. It is your view that it is possible for a particular market for a particular stock to be semi-strong form efficient but not weak-form efficient. Is that correct?

A. No, I didn't say that. But I said it's possible for there to be anomalous and

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perhaps even predictive patterns in -- it's possible for there to be some serial correlation, either positive or negative, and some predictiveness in stock prices in an efficient market.

So what may have once been considered a test for weak-form efficiency, it's possible for a stock not to pass that but nonetheless be efficient in the semi-strong sense.

And -- and the people who have written on this -- and you should check these sources -- Stephen LeRoy, probably the most prominent; Campbell, Lo, and MacKinlay. Fama himself, when confronted with predictiveness and serial correlation, responded to it in more than one article and said that it's not indicative, this predictiveness in serial correlation, that some people find in some stock prices is not indicative of weak-form inefficiency or even semi-strong inefficiency.

Q. Is it possible for a market to be semi-strong form efficient but not weak-form efficient?

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A. It's possible for a market -- well, not the way -- not in the strictest black-and-white definition of the terms, where you say that all stock prices are -- all past -- where stock prices and volume at that time are public information and semi-strong means it must be efficient with respect to all public information.

But the caveat is that serial correlation and predictiveness does not prove anymore that the market is weak-form inefficient. So we really have to be very careful that we distinguish between the random walk model, a model in which there's no predictiveness or serial correlation, and a definition of weak-form efficiency. They're three separate things.

Q. Okay. Well, let's put aside the random walk model and serial correlation, on the one hand, and just discuss these definitions on the other.

A. Okay.

Q. Okay? So -- because I want to understand your position.

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Is it possible for a market to be semi-strong form efficient but not weak-form efficient?

A. I already answered that question. I said with the strictest black-and-white definitions of the term where the information set in the weak-form efficiency definition is public information, you'd have to say no.

But that still would not prove that the market is not efficient with respect to a company's financial information true-and-false representations.

Q. So let's talk about information sets for a second, because I think this is what your testimony is getting to.

Semi-strong form efficiency is an efficiency that relates to a market incorporating all publicly available information. Correct?

A. Correct.

Q. Weak-form efficiency is a form of efficiency that relates to a market incorporating publicly available stock prices and volume data. Correct?

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A. Yes.

Q. And you'll agree that publicly available stock prices and volume data is a subset of all publicly available information. Correct?

A. Correct.

Q. And the point you were making earlier is that you believe that some tests for weak-form efficiency don't actually establish that a market is or is not weak-form efficient.

Is that what you were saying?

A. Perfect. Yes.

Q. Okay. And what are the tests that you believe fail to establish whether or not a market is weak-form efficient, that some in the field previously had thought did establish that?

A. Right.

Autocorrelation tests. I mean, Fama has commented on these himself. If you run a battery -- if you run tests on different periods of time, it's -- what he's pointed out is that it's -- if you run it on different securities and in different points in time,

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you're likely just from random chance to find incidences of apparent positive autocorrelation and negative autocorrelation.

And Fama commented that it was preposterous that the -- that some people would say that the market is weak-form inefficient because the prices are positive, are generally positively autocorrelated, where other people say they're generally negatively autocorrelated. So those tests -- you know, Fama himself said it could be the -- that it was likely an artifact of data mining.

Richard Roll said negative correlation -- Richard Roll also agrees with what I'm saying -- in fact, I learned it from him -- that autocorrelation tests don't establish weak-form efficiency, because he said that the bid-ask spread is going to cause negative autocorrelation in most times series of stock prices.

Stephen LeRoy looked at the same challenges to weak-form efficiency and the same literature of tests on weak -- of using autocorrelation tests to test market efficiency

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and said that those tests are ignoring things like time-varying risk premia, that it -- he said that it's perfectly rational for there to be some predictive element, for there to be some autocorrelation because of time-varying risk premia.

Fama -- well, Campbell, Lo, and MacKinlay, I believe, citing Stephen Roll, or at least alluding to Stephen Roll, have a famous quote where they said that it used to be the case -- they actually say that, that it used to be the case that finding autocorrelation was tantamount to finding market inefficiency. But they write in their quote this is no longer believed. We -- you know, the profession has moved past that. We reject that now.

And I'm not done.

They say -- so Campbell, Lo, and MacKinlay -- I believe it's the Lo and MacKinlay article -- say specifically, they say -- they use the word "rational." They say there are rational explanations for autocorrelation that are consistent with market

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efficiency.

So that's why it's not really useful to test for weak-form efficiency in a securities case. We go right after the information that's -- that the court's interested in, which is company representations, either false or true, and disclosures.

MR. VOLPE: Objection. Nonresponsive.

Q. And my question was what are the tests that you believe fail to establish whether or not a market has weak-form efficiency, that some in the field previously had thought did establish that?

Do you recall that, that I asked that?

A. That you asked that question?

Well, the answer is autocorrelation tests.

Q. Okay. Now --

A. But I don't want you to take that out of context in -- without the context I provided in my prior answer.

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Q. You think that the context you provided helped --

A. Yeah. I don't want to give the impression -- I've seen your briefs and I've seen in your experts' writings, and I don't want them to take -- to say Feinstein believes the profession uses these tests to test weak-form efficiency. That's not just true. I mean, I just want to make sure it's on the record that they -- that some people have done this, some people may continue to do this, but the thought leaders in the field say this is not legitimate anymore.

MR. VOLPE: Objection. Nonresponsive. I don't think there was a question.

Q. Do you believe that it would be misleading to say that Dr. Feinstein believes that the sorts of tests that don't adequately assess whether a market is weak-form efficient include autocorrelation tests?

A. That would be a true statement, but I think you should also say that he supported the statement with several cites from the

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thought leaders in the field.

Q. Now, are there any other kinds of tests that some in the field previously had thought proved or disproved weak-form efficiency, that you believe do not prove or disprove weak-form efficiency?

MR. MARKOVITS: Objection. Asked and answered.

A. There are some tests which have to be -- which are commonly used -- well, most commonly, actually, by Bajaj, but they've been proposed in the field and he's latched onto them and used them in some cases but not this one -- the Y filter test, for example, and a trading strategy -- you know, the trading strategy test.

But you've got to be very careful to make sure the test is conducted appropriately, taking into account the costs of trading, which, when you do that, oftentimes the results are not what they would be if you didn't take that important factor into account.

Q. Now, with respect to autocorrelation tests, are there different kinds of

autocorrelation tests?
A. Yes.
Q. Do they have different names?
A. Yes.
Q. What are the names of the autocorrelation tests of which you are aware?
A. Well, there's the Durbin-Watson test. I think there's -- I think -- well, I have to check my notes. I used to be able to do this more from memory than I can now.
But I think Breuschâ€“Pagan test looks at autocorrelation. There are a variety of regression model tests. The filter trading rule test. All give autocorrelation.
Q. Is the filter trading rule test the same as the Y filter test you just mentioned?
A. It can be, but it doesn't have to be. It's -- I would say filter trading rule test is the broader umbrella, and the Y filter test is a more specific example under that umbrella.
Q. Now, you mentioned an answer or two ago that there are some tests that Dr. Bajaj has run in other cases that relate to weak-form

efficiency. Is that right?
A. That's right.
Q. Okay. And do you have a view as to whether or not those tests that Dr. Bajaj has run in other cases actually appropriately test for weak-form efficiency?
A. In general or in -- with respect to his implementation in a particular case?
Well, what was the question?
Q. Let's take them in turn. First, let's talk about in general.
The tests that you were referring to that Dr. Bajaj runs to test for weak-form efficiency, did those tests actually test for weak-form efficiency?
A. They test for a property that some people associate with weak-form efficiency, but they don't actually test for weak-form efficiency because they don't control for the potential of time-varying risk premia, bid-ask spreads, and often, more often than not, the costs of trading.
Q. So you believe that the test -- well, strike that.

What is the property that some people associate with weak-form efficiency to which you just referred?
A. Well, there are some people out there that apparently are unfamiliar with the literature, that still think that in order for a stock to be weak-form efficient, it must follow a random walk. So it tests for weak-form efficient -- it associates serial -- a premise of those tests is that if you find a profitable trading rule and if you find statistically significant or sometimes economically significant serial correlation, you have necessarily proved market efficiency. That is not true anymore, as the literature indicates, as literature dictates.
Q. According to Dr. Feinstein, what is a random walk?
A. Random walk is a stochastic process where movements have no memory, that the distribution of movements going forward is in no way -- is independent of any prior movements, statistically, probabilistically independent of all prior movements.

Q. And when you used the word "stochastic," was that s-t-o-c-h-a-s-t-i-c?
A. I'm better at math than spelling. I think --
Q. Why don't you give it a shot.
A. S-t-o-c-h-a-s-t-i-c.
Q. Thank you.
And what's a stochastic process?
A. A random process. A process with a random element, or a process that's modeled as being random.
Q. Now, do you have a view as to whether any of the tests that you have seen Dr. Bajaj run in the past to assess weak-form efficiency actually assess weak-form efficiency?
A. I think they have to be analyzed on a case-by-case basis to see how he implements the test. See, the problem with finding -- see, a lot of his tests, the better ones of his tests -- should I answer or not answer? I mean, I --
Q. You can answer my questions however you see fit. We will move to strike anything

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that's not responsive at a later date.

A. So the better ones of his tests -- I mean, simply finding statistical evidence or a statistically significant period of time where there's autocorrelation doesn't prove anything because -- usually. I should say typically generally usually it doesn't prove anything, unless you've made sure that there wasn't any data mining, that you didn't, like, search a number of different periods and then hone in on a particular period where there, just from random chance, could be -- could have been a serially correlated patch of price movements. And especially -- and they also have -- they also usually -- those tests, the tests that just look for statistical evidence, statistically significant autocorrelation, might not be economically significant.

The problem there is, especially in the case of a securities case, the news can be -- in retrospect, in hindsight, the news could have been serially correlated. Some companies choose to make negative disclosures in a staggered fashion, so they'll make an

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announcement on Monday and they'll make an announcement on Wednesday and they'll make an announcement on Friday, and they'll maybe leak something to particular analysts or newspeople, so that the news comes out in a staggered fashion.

If the news is serially correlated -- well, in an efficient market. In a weak-form efficient market, the prices is going to be serially correlated. So then a serial correlation test would prove -- would not prove inefficiency in that case.

But in the better ones of his tests, where he actually looks to see if there's a profitable trading rule, he usually doesn't, and I -- usually -- he usually can't, in the work that I've seen him conduct, prove that the rule would have been identified prior to its implementation. In other words, that there's -- it's a stationary and persistent phenomenon whereby someone in the marketplace populated by competitive mutual funds and investors and analysts would be able to identify that the security is moving in a

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serially correlated fashion, and then go and implement a strategy that's profitable.

So it's not that hard to find periods of time where a strategy would have been profitable in hindsight. The tests that he runs and which are the better ones where he's distinguishing between statistical significance and economic significance don't do that.

So I can't remember a time that I've seen him do the tests in a reliable way.

Q. Do you believe that it is possible to reliably test for weak-form efficiency?

A. There are so many issues associated with weak-form efficiency, and there have been so much -- there's so much literature written on why the standard tests are not reliable because there are explanations for apparent autocorrelation that I'm not sure.

I mean, I would -- I would need to review the literature. I didn't come prepared with that, having reviewed all of the literature on what's been proposed. I'm well-versed in the state of the literature

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generally, but specific tests that may recently have been proposed, I'd want to review the literature for those.

I would say -- well, let me just summarize. I would think most of the standard tests that have been used in the past are now known to be unreliable, but I'm sure people are looking for tests that are more reliable. So it's -- there's hope.

Q. As you sit here today, are you aware of any test that can reliably identify whether markets are weak-form efficient?

A. I'm aware of tests and modifications to prior tests that make the tests more reliable than they used to be.

For example, in a filter test, taking into account costs of trading, taking into account that you have to be able to predict the serial correlation in a sample of data different from where you implement the trading rule, those tests sidestep the known deficiencies, so those tests are more reliable.

However, I don't know how those tests would account for the potential of

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time-varying risk premia and the other considerations that Stephen LeRoy wrote about in markets that are rational and efficient and yet exhibit serial correlation.

Q. And because of that, as you sit here today, you're just not aware of a test that you would feel comfortable conducting to determine whether or not a market was weak-form efficient?

A. Well, the tests that I ran that prove that the market's semi-strong efficient speak to the weak-form efficiency.

Q. How did they speak to weak-form efficiency?

A. Well, if we can prove that they're not impediment -- the kind of things that might make a market inefficient, either weak, strong or semi-strong, those impediments can be addressed with the Cammer and Unger factors and an empirical test on semi-strong style information.

Q. If a market is proven to be semi-strong form efficient, is a fortiori weak-form efficient?

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A. Again, it's not as black and white as you might think it is or as you make it.

What those tests directly prove is that the market is efficient with respect to the flow of economic financial company information.

They also necessarily, as a side matter, would prove that there are -- that the market's paying attention, that investors and analysts are paying attention, that they're behaving rationally, that there are not impediments to information flow, and that there are not impediments to trading.

Those things would suggest the market is weak-form efficient, but I guess it really depends on your standard of proof that you would need or that you're seeking.

Frankly, though, it's -- you know, the ripples on the water are not what's relevant in a securities case. It's the big waves that hit the ship. And that's why the tests that I ran in the semi-strong -- well, the tests that I run of semi-strong focus on that kind of information.

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Q. Now, are you aware of any literature that supports the view that a company can be semi-strong form efficient vis-a-vis non-price and volume-related information but not weak-form efficient?

A. I believe the literature that explains why autocorrelation tests are unreliable is either explicitly or implicitly expressed that that's consistent with -- that they're -- that in the taxonomy of types of information, a stock can be efficient with respect to fundamental pricing information without being efficient with respect to the tiny ripples on the water, previous, you know, patterns and past stock prices in volume.

But I don't think they would express it in the way that it was expressed in your question. I don't know of anyone that uses a quote similar to what you asked.

Q. According to Dr. Feinstein, what is strong-form efficiency?

A. Well, that would mean that even private information is represented or impounded into the trading prices of publicly traded

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securities.

Q. Now -- excuse me -- what is the relationship, according to you, between these three different types of market efficiency and the opinion that you rendered in your original report and your rebuttal report?

A. Well, that the taxonomy that Fama proposed recognizes that a market can be efficient with respect to one kind of information without being efficient necessarily with respect to another kind of information. Therefore, it's important to test efficiency with respect to information that's relevant in the securities case: fundamental pricing information and disclosures and allegation-related events.

Q. You believe that Fama's work recognizes that a market can be semi-strong form efficient but not weak-form efficient?

A. That's not what I said. I don't think he's ever -- well, I don't know if he's testified in a case like this about market efficiency. But I think he -- he does recognize that it's possible for a market to

be -- well, at least theoretically, as a theoretical construct, efficient with respect to some information but not all information.

Q. Is it your opinion that the market for Freddie Mac stock was during the class period semi-strong form efficient?

A. Yes.

Q. And do you sometimes --

A. Informational. In the informational efficiency sense. There's another dichotomy besides the taxonomy of types of efficiency.

Q. Well, let --

A. There's informational that's fundamental. So semi-strong efficient in the informational efficiency sense.

Q. Now, when you say semi-strong form efficient in the informational efficiency sense, what do you mean?

A. That the market is -- that there's sufficient proof that the market reflects and reacts to public information about the company.

Q. Is that different from semi-strong form efficiency?

A. No.

Q. Are "semi-strong form efficiency" and "informational efficiency" terms that can be used interchangeably, in your view?

A. No.

Q. Why not?

A. Information efficiency is a type of efficiency about how a -- what a stock price reacts to and whether the market uses or ignores information.

Fundamental efficiency is about what the price actually goes to, what the price becomes as a result of information that's been provided.

And then the taxonomy of semi-strong, weak, and strong is a taxonomy about the type of information that's at issue. Is it simply high-frequency ripples like patterns in past stock prices and volume or is it the fundamental data that people use to value stocks? That would be the difference between weak form and semi-strong form.

Q. I didn't understand your answer. So I'm going to ask it -- my question in a slightly different way.

What is the difference, if any, between semi-strong form efficiency and informational efficiency?

A. One is one of three items in a taxonomy of three, and the other is one half of a dichotomy. They're about two different things entirely. Semi-strong, weak, strong is about the type of information. Fundamental versus informational is about the type of stock reaction.

Q. And the type of information we're talking about in semi-strong form efficiency is all publicly available information. Correct?

A. Yes. But in the context of a securities case, the focus is on fundamental pricing information, fundamental -- information that would -- that's used in valuation models. Company announcements, company performance, that sort of thing.

Q. Now, you said that informational efficiency is about the type of stock reaction. Is that what you said?

A. Right. Right.

Q. What do you mean by that?

A. That the stock reacts rather than -- reacts to and the market digests and incorporates and responds to information -- digests rather than ignores; that's informational efficiency -- whereas the other half of the dichotomy is stronger. It goes further and says not only does the market react to it, but they react to it in a way such that the price the market arrives at conforms to a particular pricing model.

Q. Fundamental efficiency, in your view, relates to whether or not the market reacts in a certain magnitude to information. Is that right?

A. Well, that would be part of it. Fundamental efficiency would say that the price has to go to a particular price dictated by a particular pricing model. So it would indicate the direction, the magnitude -- yeah, the direction and magnitude, and the actual value of the price arrived at.

Informational efficiency means that the market reacts to the information. They don't ignore it. And you can see that the

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market reacts to the information via a variety of observations.

Q. And semi-strong form efficiency also relates to whether the market reacts to information. Correct?

A. Well, it's -- that's not about how the market reacts. So semi-strong can be either semi-strong fundamental or semi-strong informational. The semi-strong is about the information set that the market reacts to. Is the market -- does the market react to private information, to the development of -- and production transpiring of private information.

Q. That would be strong form?

A. Strong form is about -- is that we're focusing on private information that's not public and looking to see whether or not the market incorporates that into its trading prices.

Q. Now, semi-strong form efficiency has a directionality component. Correct?

A. Semi-strong fundamental efficiency does, not semi-strong informational.

Q. Let me turn your attention to

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page 13 and 14 of the amici brief you have before you.

I believe that's Exhibit 271. Do you have that in front of you?

A. 13 and 14?

Q. Yes.

Do you see that the --

A. One moment. I want to --

Q. Sure. Read whatever you'd like.

A. (Reviewing document.)

Yes.

Q. Do you see that in the last paragraph of this brief, it says, "It is not accurate to say there is a 'consensus' among economists rejecting the SSEMH"?

Do you see that?

A. Yes.

Q. Okay. And do you understand that the SSEMH refers to the semi-strong form efficient market hypothesis?

A. I do.

Q. And then if you look at the last sentence of that paragraph, do you see it says, "Most important, economists generally agree

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that material information, whether truthful or fraudulent, will generally affect the price of a stock and that the effect will be in a predictable direction"?

Do you see that?

A. I do.

Q. Do you agree with that statement?

A. That's an implication of fundamental efficiency. Or it's more fundamental than informational, the last part.

The part that's on topic of informational efficiency is that an implication of informational efficiency is that the price, whether -- that the price will be impacted by material information, whether truthful or fraudulent.

The direction of the movement, that's an implication of fundamental efficiency.

MR. VOLPE: Objection. Nonresponsive.

Q. And do you believe there's any literature that supports your view that directionality is a function of fundamental

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efficiency?

A. It's an implication. It stems from the definition. And there is some literature describing what -- defining what fundamental versus informational efficiency are.

Q. What literature would you point to that identifies the directionality of stock price movements as an implication of fundamental efficiency?

A. Any literature that defines the terms, because the direction is necessarily dictated by a determination as to what the right price is and what the right direction is. And that's -- those are considerations in the assessment of fundamental efficiency.

Specifically, one of the Fama articles says that you can't test fundamental efficiency without a pricing model because you're necessarily testing them jointly. And that article is support for the principle that the direction -- that directionality or correct directionality is an element of fundamental efficiency.

I mean, the -- I may have something

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to add to that answer.

Actually, the decision in Halliburton, which I don't believe there's been articles written by economists disputing it, the court said that with respect to semi-strong informational efficiency, the degree to which the price reaction was accurate is beside the point.

So, clearly, it's -- the type of efficiency that the court's interested in does not require a test of whether the price comports with a particular analyst's or investor's assessment of what the correct direction or price level has to be following the information.

Q. Let me turn your attention to page 3 of this brief.

A. One moment, though.

I'd want to point out that that last sentence that you're focusing on doesn't say that directionality is an essential element of informational efficiency. It could be interpreted to mean that when the market is informational efficiency, good economists would

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be able to reliably predict the direction of a reaction.

It doesn't say that reliable prediction of the direction or that the market predicting -- the market moving in a particular direction is an essential element of the definition of informational efficiency.

Q. Let me turn to --

A. And I would agree with that. That makes sense.

Q. Let me turn your attention to page 3 of the brief. Do you see at the bottom of the page there's a paragraph?

Could you do me a -- take a moment and read the paragraph at the bottom of page 3. Do you see that?

A. Yeah.

Q. It begins with the words "our conclusion"?

A. Yeah.

Q. It states, "Our conclusion that prices generally move reasonably promptly in the predicted direction in response to unexpected material public information

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(favorable or unfavorable) is perfectly consistent with the view that there are sometimes anomalies in the way markets process information and that bubbles can exist."

Do you see that?

A. And it's a true statement. They're not saying that those are elements of the definition of informational efficiency.

Q. You don't think that here Professor Fama and his colleagues were discussing the type of efficiency that needs to be proven in securities cases?

A. They were discussing what the profession -- consensus in the profession is about efficiency. And it goes beyond informational efficiency in that paragraph.

Q. And what is your understanding -- well, strike that.

Do you believe that a market that responds to prices in directions that are not predictable can be an efficient market?

A. Well, predictable by whom?

Q. By an economist.

Well, I think if the market is informational

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efficient, other tools can be applied to predict. So I believe it's an implication of informational efficiency, but it's not an essential -- I mean, proving it is not an essential element to proving market efficiency.

One moment.

The definition is that the stock price moves in reaction to information. And that's also the -- it's my understanding is the legal standard outlined in Halliburton, that the stock price moves.

I don't know --

THE WITNESS: Can you just read what I said just then?

*(Answer read back by the reporter.)

A. All right. That's what I wanted to say.

I mean, there could be implications of that. I mean, once you know that the market is informational efficient, it's reasonable to apply valuation tools to predict the market, to predict the market movements on the basis of different information. But it's not an

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essential element of the definition of informational efficiency.

Q. Let me turn your attention to page 1 of your report, your rebuttal --

A. I mean, I just want to add, because if it were, then what would be -- what we would be covering at depositions like this and what the expert reports in a case like this would be would be arguments between the experts as to whose valuation model was better.

I mean, it's a good thing that the courts have focused on informational rather than fundamental efficiency considerations. I mean, otherwise, you would have Dr. Bajaj saying that he believes he's right about the magnitude and direction of a movement and the entire collective wisdom of the marketplace was wrong, and that would be the proof that he would try to offer that the market wasn't informational efficient.

So it's a much more objective analysis and a much more objective standard to focus on really what is the definition of informational efficiency, rather than move

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towards implications that one might arrive at by combining informational efficiency and skill, using other tools that are outside the definition of informational efficiency.

Q. You just used the terms "magnitude" and "direction of movement." Is there a difference between those two terms?

A. Sure. Magnitude is size, and direction is direction.

Q. And is fundamental efficiency the notion that the market's getting the magnitude -- not only direction but also the magnitude correct?

A. Yes. Yes. And it could be looked at collectively or separately.

Q. Now, let me turn you to page 1 of your report.

Actually, I apologize. Turn to page 3, paragraph 12.

A. Okay.

Q. Okay. And do you see at the first sentence, you say, "Dr. Bajaj does not" --

A. Where?

Q. Of paragraph 12. Page 3.

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A. Oh. I'm looking at the -- --

Q. Oh, I'm sorry.

A. -- original report.

Q. Now, we're looking at 269, the -- 270 was the Prudential report, not the original report, and 269 is your rebuttal report.

A. And then after this question, we'll take a break. Okay?

Q. Sure. We can take a break right now if you want.

A. I'm curious to see what you want me to look at.

Q. Do you see paragraph 12? It says, the first sentence, "Dr. Bajaj does not dispute that Freddie Mac stock exhibited a statistically significant negative price reaction to the revelation of new company-specific information on 20 November 2007."

Do you see that?

A. Right. That's a true statement.

Q. Okay. And then do you see the last statement? You say in that paragraph, "This price behavior demonstrates market efficiency

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and in conjunction with the other Cammer and Krogman factors proves the market was efficient throughout the class period."

Do you see that?

A. Yeah. That's the opinion of my work in this case.

Q. So you believe --

A. That's the essence of my opinion.

Q. Well, this is an opinion that is not based on your collective test. Correct?

A. No, it is.

Q. In that sentence, you say "this price behavior." You're talking about the price reaction on November 20th. Correct?

A. Well, let me just clarify right here and right now that my conclusion of market efficiency is based holistically on all of my findings.

Q. Okay. And if you remove any one of those findings, that doesn't fairly reflect your conclusion. Correct?

A. No. That's -- I think we have a different definition of "holistic."

Q. In other words, if you had never

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done your collective test, would you have concluded that the price behavior on November 20th alone, in conjunction with the other Cammer and Krogman factors, proves that the market was efficient throughout the class period?

A. You asked me that in the last deposition, and the answer now is the same as it was then. It's a hypothetical. I remember calling it that and calling you out on that that it's a hypothetical. Because the two empirical tests do point in the same direction towards efficiency.

It's hard to say specifically. I think there would have been less evidence, but reasonably it would have been sufficient evidence. But there would have been less. There would have been less evidence if, in fact, there were -- if, in fact, there was less evidence, there would have been less evidence. I mean, you can't get around that.

Q. But --

A. But it's still -- I mean, I -- as far as what the legal standard for proof is, I

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mean, we've got two -- I mean, granted, it's in the Second Circuit, but there are two recent cases --

Q. Well, hold on.

A. -- where they said that you don't need an empirical fact to test at all.

Q. Well, hold on.

Doctor, are you a lawyer?

A. I'm telling you what my understanding of the legal standard now is for proof.

Q. Are you a lawyer?

A. I am not a lawyer.

Q. Are your opinions grounded upon any legal expertise?

A. No.

Q. Are you offering an opinion on the state of the law?

A. Well, I am aware of what the Second Circuit said about my research. The Second Circuit said my research --

Q. Well, I didn't ask you about your research or what the Second Circuit said. I simply asked you --

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A. But it goes to answer your question, though.

Q. -- are you offering an opinion on the state of the law?

A. I'm not sure how you define those terms, the state of the law. I know what courts have said about my research. They said that even without the empirical factor, the other Cammer and Krogman factors are sufficient proof. So that informs me as an economist about the legal standard of proof.

Q. Are you here as an advocate on behalf of OPERS?

A. Absolutely not.

MR. FRANK: Why don't we take a break here.

THE VIDEOGRAPHER: The time now is 11:50. We're off the record.

(Recess taken from 11:50 to 12:37 p.m.)

THE VIDEOGRAPHER: The time now is 12:37. We're on the record.

BY MR. FRANK:

Q. Dr. Feinstein, good afternoon.

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A. Good afternoon.

Q. So the opinions you offered in this case are based on your understanding of the field of financial economics. Is that true?

A. Yes.

Q. Okay. Now, as a financial economist, the mere fact that a security trades on the New York Stock Exchange is not enough for you to conclude that the market for that stock is semi-strong form efficient. Correct?

A. Depends what the standard of proof is. It certainly makes it more likely than not.

Q. Well, I'm talking about your standard of proof. You're a financial economist. Right?

A. Yes.

Q. And you have been asked in this case to opine on whether or not Freddie Mac stock traded in an efficient market. Correct?

A. Yes.

Q. And for you, the mere fact that Freddie Mac stock traded on the New York Stock Exchange was not sufficient for you to conclude

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with a sufficient degree of certainty that Freddie Mac traded in an efficient market. Correct?

A. I would conclude from that fact that it's more likely than not that it trades in an efficient market.

And you asked these questions at the last deposition. I would want to do further analysis, though, before saying that I have proved it.

Q. And you're not alone in this view that you would want to do more analysis to determine whether or not a stock trades in an efficient market. Correct?

A. Again, it depends on the standard of proof. I think most economists would say that inefficiency is rare. And when you couple that with a stock being listed on the New York Stock Exchange, it makes it even more rare. So that fact alone would make it more likely than not that the stock trades in an efficient market.

But I would think most economists before they would say they have proved it trades in an efficient market would want more

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evidence than that.

Q. In order to exclude the possibility that this is one of those rare circumstances where the stock trades in an efficient market, you wanted to do more than just identify what exchange it traded on. Right?

A. Yes.

Q. And in order to do more, you did a number of things. Right?

A. Yes.

Q. One of those things was to assess the structural factors outlined in the Cammer and Krogman cases. Right?

A. Yes.

Q. And another was to conduct tests to assess the cause-and-effect relationship between the information and stock price movements. Right?

A. Yes.

Q. Okay. Now, you criticize Dr. Bajaj in your rebuttal report for not performing certain tests that he performed in other cases. Is that right?

A. Not precisely. I really criticized

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him for creating a double standard where he criticized me for not doing tests precisely as I've done them in other cases, and call him out that he did the same thing that he was criticizing me for.

Q. Now, he performed several tests in the Allergan case that he did not perform here. Correct?

A. Yes.

Q. Okay. Is it -- are you of the view that he should have performed here the cases -- the tests that he performed in the Allergan case?

A. That's -- that wasn't my opinion. My opinion wasn't that he should have performed those tests. My opinion was that the fact that he didn't perform those tests suggests that perhaps he's not being completely unbiased.

Q. Well, do you have a view as to whether he should have performed those tests or not?

A. I don't think those tests are informative, either for Allergan or for this case, for reasons I described before lunch.

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But I don't -- I can't -- I don't know why he would -- would not have done those, except for if he had perhaps arrived at conclusions that didn't support -- or findings that didn't support his conclusion. That seems to be the best explanation of why he didn't do them.

So I just think it raises concerns of impartiality rather than -- rather than deprives the court of informative information.

Q. You're concerned about Dr. Bajaj's impartiality?

A. Absolutely. Yeah. I could describe many reasons why. The way he describes my work, the way he quotes me out of context, the way he was selective in how he presented things and said things certainly raised issues of impartiality. But I understand.

Q. Do you -- if Dr. Bajaj had performed the tests in this case that he performed in Allergan, would you have wanted to consider the results of those tests in forming your conclusions here?

A. Only if he had. Only if he had offered the -- those findings as supportive of

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his conclusion.

Q. If you were to discover that there were tests done on whether Freddie Mac's common stock traded in a weak-form efficient market, is that a fact you would have wanted to know?

A. I didn't understand. I mean, what I would want to know is why he chose not to do it. And if he had done it, I would evaluate what he did.

Q. Well, we've established earlier you're not a lawyer. But do you have an understanding at this stage of the proceeding as to whose burden it is to prove or disprove market efficiency?

A. Yes.

Q. Whose burden is it?

A. Plaintiffs'.

Q. And do you happen to know what Dr. Bajaj was tasked with doing in this case?

A. Yes. The same thing he was tasked with doing in other cases where he did run those tests, to evaluate my work.

Q. And how do you know that?

A. Pardon?

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Q. How do you know that?

A. I think he said so in his -- in his scope of work.

Q. Now, do you know -- did you review the Allergan report that he drafted?

A. Yes.

Q. Did you disagree with anything in the Allergan report?

A. Well, I'm not saying I agreed with everything in the Allergan report, but I don't recall seeing anything that I disagreed with.

Q. Did he do anything in connection with his work in Allergan that you thought was illogical?

A. Well, like I said, the serial correlation tests are not reliable as indicators of market efficiency. So maybe that's -- it's just they were unnecessary, so it's a matter of judgment but not necessarily illogical.

Q. Outside of the litigation context, have you analyzed whether a market is efficient?

A. Certainly.

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Q. In what context?

A. Well, for 10 years I ran a program at Babson College called the Babson College Fund, where we would -- we managed a portion of the college endowment, myself and -- well, students under my auspices. And I would -- I would teach where to look for inefficiently priced stocks and how to identify if a stock may be priced inefficiently such that there was a profit opportunity.

Q. What tests did you use to identify whether there were profit opportunities?

A. Well, this was fundamental efficiency. But I would -- we would -- I instructed the students to look for tests that essentially failed the Cammer factors. They would look for small stocks that had little or no analyst coverage, perhaps low volume, so that these stocks would be overlooked by our competitors who were institutional investors and better-resourced investors.

And then they would do valuation analyses to ascertain whether the market was pricing those stocks too high or too low

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relative to certain fundamental valuation models.

Q. Do you still manage a portion of the college endowment?

A. No.

Q. When did that come to an end?

A. I think it's in my first report. I have that in the resume section.

Q. You don't remember offhand?

A. No.

Q. Why did that come to an end?

A. I chose not to do it anymore. And I think I did it for about eight to ten years, somewhere in that vicinity, and felt it was time to turn it over to someone new.

Q. Did you or your students use any empirical analyses in connection with your work for the fund?

A. Sure.

Q. What empirical tests did you use?

A. Well, empirical -- depends what you mean by "empirical." Each of the Cammer factors is, in fact, empirical. You look at volumes; you look at analyst coverage. Those

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are empirical facts.
But it was those combined with valuation, fundamental valuation models.
Q. You didn't use the z-test in that context, did you?
A. No. You know, even Fama said that it's virtually impossible to make money off of serial correlation. Fama wrote about this in an article.
Q. Outside of the litigation context, have you ever used a z-test to assess market efficiency?
A. Oh, z-test. I'm sorry. I thought -- I got a little confused. I apologize. I thought we were talking about the Y filter test.
Was your previous question about the --
Q. I'll read it back for you.
A. Sorry.
Q. I asked, "You didn't use the z-test in that context, did you?"
A. And I just said no.
Q. No. You said, "No. You know, even

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Fama said that it's virtually impossible to make money off of serial correlation. Fama wrote about this in an article."
That was your answer.
A. Oh. Both parts of that answer are correct, although the second one is more addressed to a Y test than a z-test. But, no, I didn't use a z-test for purposes of identifying profitable buying or selling opportunities.
Q. And so let me ask the next question I asked, which I think caused you to recognize that you had misheard me earlier.
I asked outside of the litigation context, have you ever used a z-test to assess market efficiency?
A. No.
Q. Now, let me turn you back to your rebuttal report that is Exhibit 269. Let me turn your --
A. I'm thinking now. I just want to amend -- there is some ongoing theoretical research that I'm doing with Miguel Villanueva that does use the z-test, but it's for a

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working paper that we hope to publish. And that's outside of litigation.
Q. And that hasn't been published yet?
A. Correct.
Q. And has that been submitted to any journals or periodicals?
A. No. Not yet.
Q. Okay. Have you published any academic papers on market efficiency in peer-reviewed periodicals?
A. Yes.
Q. Okay. What are those?
A. The Journal of Financial Education, experimental paper.
Q. That's an article that you published?
A. Yes.
Q. Anything else?
A. There are some -- there's some additional stuff. I mean, there's the American Bankruptcy Journal I published in, an article about market efficiency that was coauthored. I would have to look at my list of publications to give you more than that.

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Q. Now, in paragraph 14 on page 8 of 70 of your rebuttal report, you write, "Dr. Bajaj challenges the validity of the z-test for assessing market efficiency. However, his challenges are misguided as they are based upon an improper definition of 'market efficiency.'"
Do you see that?
A. Yes.
Q. What do you believe was Dr. Bajaj's definition of "market efficiency"?
A. Well, he said that the z-test was deficient because it didn't test directionality, and directionality is fundamental efficiency concept, and that's what I meant here, not -- rather than an informational efficiency concept.
Q. Other than an issue of directionality, do you believe that Dr. Bajaj was basing his challenges on an improper definition of "market efficiency"?
A. That particular challenge was about -- about directionality was based on the improper definition. He raises some other challenges which I believe are also misguided

but for other reasons.

Q. For reasons unrelated to his definition of "market efficiency"?

A. They're closely related but not totally unrelated. I mean, his -- some of his -- one of his challenges is related to his definition of "materiality" and the -- and the role of materiality in market efficiency. He made a mistake there which led to another one of his misguided challenges.

Q. What is the mistake he made regarding the role of materiality in market efficiency?

A. He opined that 80 to 90 percent of tested events in a collective test would have to be statistically significant in order for that to be an indicator of market efficiency, which generally is logistically impossible by design of a significance test.

Q. Is that logistically impossible in your collective test because your collective test is not a test of dates on which material news was released to the market but rather a test where dates with higher information flow

was released to the market?

A. Well, I'm not going to accept the premise that these are not dates on which material news was released to the market. The problem is that he defined material as being dates or being information that would reasonably elicit a statistically significant reaction. That's how he defined "materiality." That was the problem.

Q. Is that not how you define "materiality"?

A. It's not at all how I define "materiality."

Q. How do you define "materiality"?

A. That the news is important to a typical investor or analyst in the sense that it would affect their valuation or transaction decisions, not necessarily cause their valuations to change by an amount over the threshold at the 95 percent confidence level for statistical significance.

Q. If material news doesn't cause a valuation to change by an amount over the threshold at the 95 percent confidence level

for statistical significance, how is it possible to test whether or not news is material?

A. Well, one way is in a collective test. The -- well, I don't -- we're not testing here whether the news is material. We're testing whether the market is efficient. That's what this analysis is about.

You want -- so your question is about something different. Your question is, how do you test if news is material?

Well, okay. Several ways. With reference to the literature. The literature tells us which news comprises arguments and valuation models, which news historically, according to other people's analyses and tests, changes valuations, which news is important to investors for transactions and value decisions. It's what the literature is about.

You can also test materiality. It's not going to be a short answer, but you asked how do you test materiality without doing -- without observing that it has a 95 -- that it's over the threshold for 95 percent confidence

significance.

You can also see did analysts discuss that news? Did the company discuss that news? Did newspapers report on that news? These are other tests of materiality.

Q. Now, you write in paragraph 14, because -- I'll read the whole sentence.

"The statistical issues Dr. Bajaj raises as challenges to the validity of the z-test findings are erroneous and moot because, as Dr. Bajaj acknowledges multiple times in his report, none of the purported statistical problems he identifies affect the qualitative results of the z-test in this case."

Do you see that?

A. That's correct.

Q. Now, isn't it a fact that Dr. Bajaj identified a number of criticisms that, when taken together, affected the results of your z-test?

A. Oh. He has to bend over backwards and use three or four of these at a time in order to arrive at a change in a qualitative result. But individually they didn't.

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He himself said that if you use the continuity adjustment, you still have a significant result. If you use the unpooled variance, you would still have -- the z-test would still indicate significance.

It's only when you do those two things and knock out the last -- irrationally and inappropriately knock out the last event that he started to get results that -- where he weakened the z-test to such an extent that he ended up with inclusive results instead of conclusive results indicating market efficiency.

Q. When you said "irrationally and inappropriately," you were referring to the statement in the FDT article that said in a collective test you shouldn't include the last day of the class period. Is that right?

A. No. No, I wasn't referring to the FDT article, and I don't think necessarily that's what the FDT article is -- is dictating for all possible situations.

It's irrational and inappropriate to eliminate the November 20, 2007, date, because

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it was unequivocally -- unequivocally satisfied the selection criteria, and it's an unequivocally important date based on the news -- not on its price movement, but based on the news -- important date in the life of this company, regardless of what -- who else noticed that it was an important date, regardless whether analysts noticed that or investors noticed that or attorneys noticed that or the court notices that.

Regardless of who else notices that, Holman or Bajaj, any reasonable analyst looking for the material information announcements would identify that day as being one. And so to simply say that other people have noticed it too, therefore it must be excluded from a statistical test, is inappropriate.

I guess "inappropriate" is the right word, not "irrational."

Q. And you think that the rules set forth in the FDT article about excluding the last day of the class period is an inappropriate rule?

A. In some cases, it might be

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appropriate. If there's not -- you would not pick it because it was a drop. But if it was indisputable that it was important news, you should pick it. And if the FDT article says don't, that's incorrect, too.

If it's important news, it should be analyzed. If it's important news, the market's reaction to that news should be analyzed in a test of the question: Does the market ignore news or incorporate news?

Q. Now, in paragraph 18, you write, in the second sentence, "Dr. Bajaj incorrectly contends that without a z-test, proof that alleged inflationary events were statistically significant at a greater incidence rate than typical days in the class period. The alleged misrepresentations and omissions could not possibly have impacted the Freddie Mac stock price."

Do you see that?

A. I do.

Q. And I'll confess to you I don't know if there's a missing word or if I'm just slow, but I did not understand that sentence.

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So can you explain to me what you meant to convey by that sentence?

A. Sure. There's two ways to edit it so it would be easier to understand. We can either add the word "without" before the word "proof," so that it's "without a z-test, without proof that alleged inflationary events were statistically significant at a greater incidence rate than typical days in the class period." That's one way to understand it. Or move the comma from after the word "z-test" to after the word "proof": "that without a z-test proof, that alleged inflationary events."

So what I'm saying here is Dr. Bajaj ran the z-test. I mean, after criticizing the z-test and saying that it was inappropriate and poorly constructed and et cetera, he actually used it and said that because it didn't find a difference in the dynamics, the price dynamics on misrepresentation dates versus all other days, that that would prove that the alleged misrepresentations and omissions had no price impact.

And that's what he said. I mean,

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his conclusion was that because the z-test on misrepresentation dates did not indicate different price dynamics, therefore he thinks he proved no price impact. He's just wrong, for a variety of reasons.

Q. I see.

A. And there other reasons that are laid out here.

Q. So -- now, you used the z-test. Right?

A. Yes.

Q. Okay. Now, you're not criticizing Dr. Bajaj for using a test that you think is an effective test, are you?

A. I am. I'm criticizing him for on the one hand saying it's an invalid test and then embracing it. I think that's indicative of bias.

Q. Well, is it possible that he used the test because, even though he thinks it's not a probative test, he knew that you do think it's a probative test, and therefore it would be a way for the two of you to be on -- to be communicating, so to speak?

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A. I mean, anything's possible. But he didn't -- the way he was so forceful in his conclusion, saying that this test proves no price impact, says that he's embracing the test, and it's hard to accept that he's embracing the test after he rejected the test. It seems like he embraces it when he wants to and rejects it when he wants to.

Q. Well, do you think that -- did you conduct any test to determine whether or not there was a price impact on the misrepresentation and omission dates?

A. No.

Q. And is a z-test an appropriate way to test whether or not there's an alleged price impact on misrepresentation and omission dates?

A. Not really.

Q. Why not?

A. Well, because typically, misrepresentations and omissions maintain the mix of information by concealing negative or adverse developments or conditions. So, typically, what you see -- would see on those misrepresentations and omissions dates is no

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new news and no price movement. So a test that's looking for price movement is inappropriate for that purpose.

On the other hand, I mean, if it found it -- I mean, if you did find significant movements or discernible movements, that would suggest that there was price impact. But not finding price movements is not going to prove that there was no price impact. And since his test was to see if there was no price impact, it's inappropriate.

Q. Heads I win, tails you lose?

A. Well, blame classical statistical hypothesis testing for that. I mean, that's what hypothesis testing does. You set a null hypothesis and you test the hypothesis. You can -- you can perhaps reject the hypothesis based on the results. But if the test fails to reject the hypothesis, that doesn't prove the hypothesis true. That's written about in almost every introductory statistical textbook, and I believe I referenced it in my report as well.

Q. So if Dr. Bajaj had found

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statistical price movements on misrepresentation and omission dates, that would have been indicative of price impact. Is that right?

A. Well, he did. Actually, he did find evidence of it, but then he looked for ways to dismiss it. Yes, it would have been evidence.

Q. And if that -- if such statistically significant price movements on those dates would have been indicative of price impact, it was therefore incumbent upon him to test those dates. Correct?

A. I didn't understand.

Q. Well, it's your view that if there was statistically significant price movements on the misrepresentation and omission dates, that would be proof of price impact. Correct?

A. I don't know if I could make a blanket statement. It would certainly be indicative.

Q. And accordingly --

A. I would also have to do confounding information tests and analysis of the information, and basically confounding

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information is what I would be most concerned with.

Q. Taking confounding information into account, it was therefore incumbent upon Dr. Bajaj, who was assessing price impact, to test the misrepresentation and omission dates. Correct?

A. Well, I mean, my report was not about price impact. His report was about price impact.

That makes sense. Makes sense that he should look at those dates to see if there was proof of price impact. But if he doesn't find -- I mean, if the test is inconclusive, you can't draw the conclusion that there was no price impact.

Q. Well, there's only two sets of dates that it made logical sense for him to look at. Correct?

A. Do you mean the misrepresentation dates and then the disclosure date?

Q. Right.

A. Right.

Q. And so --

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A. Or the realization of the risk date.

Q. Well, we'll get to that.

But to summarize, there were two sets of dates that it made sense for him to look at. One is the -- one set is the misrepresentation and omissions dates. Correct?

A. Well, actually, I'm not -- it's not something I wrote about. But as I sit here now, if he was trying to prove there was no price impact, he would have to look at every date to see if there was price impact on any of the dates. There may have been price impact on other dates that weren't identified as a realization of the risk date or as a misrepresentation date. I mean --

Q. What other dates are you referring to?

A. Other dates in the class period. There were -- I mean, if -- the allegations are that the company concealed various exposures and risks and deficiencies at the company from the investing public, and because of that, the marketplace was surprised when poor performance

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resulted.

So you might want to look on other dates in addition to the November 20, 2007, date to see if there was a surprise about poor performance or adverse developments on other case as well. I don't think it needs to be -- it should be limited to just the dates that are cited in the complaint.

Q. Well, let's be specific. If he's not supposed to only test the dates on which a misrepresentation or omission was made, in the date on which the plaintiff says that there was either a corrective disclosure or the materialization of an allegedly concealed risk, what other dates do you think he should have been testing?

A. He should have examined at least the news on each date to see if there were other dates on which the market was surprised by developments on account of having been deceived about the company's condition.

Q. Have you drawn a conclusion about whether or not the defendant in this case, the defendants, Freddie Mac and several of its

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former officers, actually made misrepresentations or omissions?

A. No.

Q. Now --

A. But the test would require that he accept as a working hypothesis plaintiffs' allegations.

Q. Why is that?

A. Because that's what he's trying to test. Did the information that plaintiffs allege was concealed have an impact on the price, either moving it up or moving it down. And it doesn't necessarily have to be on a disclosure date or -- a disclosure date that was cited by the lawyers or even a representation date cited by the lawyers --

Q. You believe --

A. -- in order to see -- in order to see if, in fact, the information that they allege was concealed had an impact on the price.

So I just want to be clear that the test -- you said does he only have to test those dates, and this is the reason why I would

think he would need to test more than just those dates. He'd have to do his own independent evaluation of which dates need to be tested, not just picking the dates out of the complaint that were mentioned.

Q. You think he would need to review the news on every date of the class period?

A. Like I did, yes.

Q. And you reviewed the news on every date of the class period for the purposes -- for the purpose of identifying a material news date or dates to test. Is that right?

A. Well, for determining what would be a reasonable selection rule for a collective event study test and for then picking those dates.

Q. And in connection with that effort, you reviewed the news relating to Freddie Mac on every date of the class period?

A. Yes.

Q. And was your news review limited to the New York Times and Wall Street Journal?

A. No. It's cited in my exhibit, in the first report, which articles I looked at.

Q. And that news review informed the rule that you chose for selecting news for your collective test?

A. Yes.

Q. And it also informed your decision on what date to test for your event study?

A. The single-event event study, yes.

Q. And you ultimately determined that there was only one appropriate date to test for your single-date event study. Is that right?

A. Yes.

Q. And that was based on that news review?

A. The news review. The analyst's commentary. Company statements. All of the information about the company.

Q. Okay. Now --

A. Well, I identified that there was one best date to test. There may have been -- but Dr. Bajaj didn't recommend that there should have been other dates.

Q. Do you believe there were other good dates to test?

A. I found that the -- I determined no,

in the course of my analysis.

Q. Now, let me turn your attention to page 8 of your rebuttal report. Do you see in paragraph 27 you're discussing anomalies observed in the literature?

A. Yes.

Q. Okay. And in the middle of that paragraph, you write, "Dr. Bajaj references four academic articles in which the authors investigate anomalous events where a handful of stocks exhibited isolated and brief periods of inefficiency."

Do you see that?

A. Yes.

Q. And then at the bottom of that paragraph, in connection with discussing an article in the Journal of Finance, you mentioned that -- or you can even go to the top of page 9, where you write, "For example, one study examines impediments to arbitrage" --

A. Wait. I lost you. Where are you?

Q. The top of page 13 of 17.

A. "For example, one study." Okay.

Q. "For example, one study examines

impediments to arbitrage using a sample of 82 situations between 1985 and 2000 where the market value of a company is less than that of its ownership stake in a publicly traded subsidiary."

Do you see that?

A. Yes.

Q. And are those 82 situations among the handful of events you were referring to in the earlier sentence in paragraph 27?

A. Yes. I mean, it's a 15-year period and there are between 4- and 10,000 publicly traded stocks in that period. That would -- that's a handful, yes.

Q. And so over that 15-year period, it appears that there's five or so companies a year that fall into this category, on average?

A. I didn't do that math, but I mean, I consider 82 to be a small number relative to the 4,000 to 10,000 publicly traded companies over that period in the United States.

Q. Now --

A. And then the rest of the paragraph, I mean, says that it's not necessarily a

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profitable -- it's not necessarily profitable information to know that this price anomaly may have been apparent.
Q. Let me turn your attention to -- now, do you recall that I previously asked you about a pooled estimate of the standard error based on both populations at your -- on the first day of your deposition?
A. I do.
Q. And in your rebuttal report, you addressed the pooled versus unpooled issue. Correct?
A. Yes.
Q. Now, let me turn your attention to that section of your rebuttal report, which, if I get there quickly enough, it's on page 36 of 70 or page 32.
Do you see that?
A. Yes.
Q. That's subsection T?
A. Yes.
Q. And you write in the middle of the first paragraph -- strike that.
So this is a section in D that's

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both on the unpooled standard error and the inclusion of a continuity correction. Right?
A. Well, it has -- yes.
Q. Now, the first paragraph, paragraph 92, relates to the unpooled issue, and the second paragraph relates to the continuity correction. Right?
A. No. The second paragraph has the two combined, the two effects combined. So they're not taken independently.
Q. I see.
Now, in the first paragraph, you write -- in the third sentence, you write, "That is, while I dispute the need for a variance adjustment or an alternative variance estimator, making the changes Dr. Bajaj recommends has absolutely no effect on the qualitative results and conclusions of the test."
Do you see that?
A. That's correct.
Q. Now, why do you dispute the need for a variance adjustment or an alternative variance estimator?

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A. Because under the null hypothesis that's being tested, the pooled estimator gives you better Type I and Type II error. So it's the better estimator. Moving to an unpooled weakens the test unnecessarily.
Q. And so do you believe there's any circumstance where it's appropriate to use the unpooled approach?
A. Yes.
Q. And what is that circumstance?
A. If the hypothesis of any quality was in the opposite direction, that -- well, in this case, in my case, the null hypothesis was that the news events had a lower incidence of significance. If the null hypothesis was the opposite, then the unpooled variance would be more -- would be appropriate.
Q. Do you recall during the first day of your deposition me asking you questions about the pooled versus unpooled approach?
A. Yes.
Q. And after that first day, did you talk to anyone about the pooled versus unpooled approach?

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A. Sure.
Q. Who did you talk to?
A. Miguel Villanueva.
Q. Anyone else?
A. No.
Q. And what did Miguel say to you and what did you say to him regarding the pooled versus unpooled approach?
A. I don't recall specifically. I mean, it's never been an issue for me or for Miguel because of the diagnostics we ran and which we presented to you, which are immune from this criticism, which don't require a decision as to whether to use pooled or unpooled, but also because the test had passed the diagnostics previously, so it just didn't matter.
Q. Is Miguel -- Miguel works at your --
A. Yes.
Q. -- company. Right?
A. Right.
Q. Is he also a professor at Babson?
A. No.
Q. Is he affiliated at Babson in any

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way?

A. No.

Q. Was he a student of yours?

A. No.

Q. Now, after the first day of your deposition, did you read any literature regarding the pooled versus unpooled approach?

A. I don't know the exact timing. I know the issue's been raised in other cases, so I've looked at it. I don't recall whether it was before or after.

Q. But you do recall reviewing literature regarding the pooled versus unpooled approach?

A. Yes.

Q. What literature did you review?

A. There's literature on the subject. It's in statistical books and journals. I also did my own analysis. There's analytical -- rather than just blindly accepting what's in a general textbook, one can do an analytical evaluation of the power of the test, the Type I error and the Type II error of a test, with and without -- with pooled and with unpooled

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variance. I did some analysis there, and it just further confirmed that what I had told you in the last deposition was correct: this is a nonissue.

Q. Did you do an analytical evaluation of the power of the test in this case after your deposition?

A. I don't know whether it was in this case. I mean, the issue has been raised in other cases as well, and at some point I did it.

Q. When you say it just further confirmed that what you told me in the last deposition was correct, did you have in mind work that you had actually done in this case?

A. I don't -- no. I remember that at the time I was -- at the time of the deposition, based on everything I had done up to the deposition, which I conveyed to you, I was satisfied it was a nonissue, and I'm still satisfied it was a nonissue. I don't remember exactly the timing of when I did further analysis. I'm planning to write -- I'm planning to write an article on the subject.

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Actually, I think it was long after the deposition, so I shared some of these ideas with statistics professors at Babson. I am 100 percent convinced I'm right and can prove it.

Q. What statistics professors did you share these ideas with?

A. I don't know. I just -- my office recently changed at Babson, so I'm actually surrounded by a number of them and I don't remember specifically who I talked to. But when they asked what I was working on, because I was meeting a new group of people at the school, I said this might be -- this is something that I'm interested in working on and that it might be of interest to them as well.

Q. Do you remember any of them expressing an opinion to you regarding the merits of the pooled versus the unpooled approach?

A. I think they liked what I found. In this particular case, you can prove that the power of the test increases and the Type I error decreases if you use the pooled variance,

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given what the null hypothesis is.

Q. When you say --

A. Usually there's a trade-off of Type I and Type II error. In this case, they both move in a better direction using the better estimator.

Q. And when you say "in this case," you mean the Freddie Mac case?

A. Yeah.

Q. And do you have calculations that show that?

A. No. These were scratch paper, back-of-the-envelope things in an academic setting. I didn't save any notes. When it's published, I'll send it to you.

Q. Are you planning to testify in this case that the power of the test increases and the Type I error decreases if you use the pooled variance?

A. No. What I would testify in this case is that it's moot. It's moot even according to Dr. Bajaj's own work. That's enough. The rest, I'll save for an academic setting.

Q. Why do you believe it's moot even according to Dr. Bajaj's own work?

A. It says so in paragraph 92, that when he changed it, he got a Z-statistic of 2.32, which is still significant at the 95 percent level.

Q. Do you believe that it's unfair for Dr. Bajaj to identify what he perceives as a number of errors that you've made and to assess them collectively and identify that they do have a qualitative effect on your results?

A. In this setting, actually, yes, because he's being one-sided. He's not pointing out that the binomial test, the bootstrap test, and the Fisher exact test all -- none of those have a requirement that you make a decision between using a pooled and unpooled variance. So it sidesteps the issue that he considers to be important. And all three of those tests confirm the result of the z-test.

So the fact that he simply disregards the fact that there's analytic and empirical proof that the argument is moot is

unfair. Yeah, it's not unfair, it's just uninformative. I mean, it's a waste of -- it's a waste. Leave it at that.

Q. You think those three diagnostic tests that you just mentioned are very important?

A. Only because he raised the issue, the diag -- and he recognized in his report that he raised the issue. So he knows that those tests were run. He knows what the results of those tests were. That should have been enough to prove to him that it's moot.

Q. He addressed those issues, those tests in his report, didn't he?

A. Do you want to show me where? I don't think he --

Q. You don't recall?

A. I don't recall that he -- my recollection is that he disregarded them, that he did not address them appropriately. The appropriate response to seeing that all three diagnostic tests confirmed the z-test is that whatever academic disagreement we may have about the proper construction of the variance

estimator is moot and has no bearing on whether or not Freddie Mac stock traded in an efficient market over the course of the class period.

Q. Now, in paragraph 92, do you see where I read a moment ago that you "dispute the need for a variance adjustment or an alternative variance estimator"?

Do you see that?

A. Yes.

Q. Now, in paragraph 93, you don't say that you dispute the need for a continuity correction. Correct?

A. I say it's moot. I mean, I -- correct.

Q. Now, do you dispute that you should have used a continuity correction?

A. I dispute that it's a relevant issue.

Q. Well, assume for a second that you conducted a test and that all the facts were the same here. But if you used the continuity correction, it would have rendered your results qualitatively different than if you hadn't used it.

In that case, do you believe that you should have used a continuity correction?

A. Not necessarily, because there are diagnostic tests that prove that the choice of using a continuity correction or not doesn't matter. The facts, the empirics, the stock returns prove that Freddie Mac stock moved more on high news-flow days than on all the other days. It's an undisputable fact, given the prices and the collection of tests.

The explanation for why when he bends over backwards and then not only makes these two corrections but also throws out an important date, why he would get an inconclusive result instead of a statistically significant finding reasonably is more because of how he weakened the test than how the market may have been weak in the first place.

Q. Well --

A. This is what he's -- what he's doing is -- he can't do anything to change the market from being efficient to inefficient, but he can raise issues that give the appearance of the test failing to find the efficiency, and that's

what he's done here.
So if what we're after is the truth -- and that is what we're after -- then he should have looked at all four versions collectively rather than just continue with this critique combining a continuity correction, an unpooled variance, and a dismissal of an important event date.
Q. Is it fair to say, then, that from your perspective, the failure to include a continuity correction is an immaterial error?
A. In the context of all the findings, yes. Absolutely.
Q. Now, let me turn to --
A. Can we have just a one-minute break?
Q. Sure.
A. I just left my water outside.
MR. FRANK: Off the record.
THE VIDEOGRAPHER: The time now is 13:29, and we're off the record.
(Recess taken from 1:29 to 1:30 p.m.)
THE VIDEOGRAPHER: The time now is 13:30. We're back on the record.

BY MR. FRANK:
Q. Now, with respect to the pooled versus unpooled approach, you didn't have any concerns about Dr. Bajaj's actual calculations. Correct?
A. No.
Q. Okay. And after the first day of your deposition in this case, did you make any effort to determine whether or not Ferrillo, Dunbar, and Tabak used the unpooled calculation in their article that discusses the z-test?
A. Yes. I looked at the footnote you directed me to, and it doesn't have the words "pooled" or "unpooled" in there at all.
Q. Well, did you do anything to attempt to replicate their calculation?
A. I don't recall.
Q. As you sit here today, do you know whether or not FDT used a pooled or unpooled approach in their calculation in that article?
A. What I did check was a Tabak report where he used the test, and I saw that he used the pooled variance in that report. But because it's a moot issue, I didn't discuss it.

But it was something I was looking at. I remember -- you actually mentioned, I think, in the second deposition, you know, what would Tabak say? So I wanted to go see what Tabak did. But I didn't -- it's been a while. I just don't recall one way or the other.
Q. Do you believe you saw an article where Tabak used a pooled approach?
A. No. It was a forensic report.
Q. Where he was testifying on behalf of a plaintiff?
A. I don't recall which side he was testifying for.
Q. Do you remember which report it was?
A. I don't. I don't.
Q. And you didn't mention it in your rebuttal report. Is that right?
A. Correct.
Q. Now, with respect to the continuity correction, you didn't have any concerns about Dr. Bajaj's calculations with respect to that. Correct?
A. Well, my concern was that it was unnecessary.

Q. Well, to be clear, let -- and this will help if we go --
A. Sure.
Q. -- just help us get out of here a little bit earlier.
You didn't believe that Dr. Bajaj made any calculation mistakes in connection with his calculations of the continuity correction. Correct?
A. That is correct.
Q. Okay. Did you talk to anyone after the first day of the deposition about the use of a continuity correction?
A. No.
Q. Did you read any literature about the use of a continuity correction?
A. I think I did, yes.
Q. What literature did you review, if you recall?
A. I don't recall.
Q. And do you remember the substance of what you read?
A. The substance was what the intent of a continuity correction was.

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Q. You came to understand what the intent of a continuity correction was?

A. Right.

Q. And what's that intent?

A. Well, the same thing as the intent of using Fisher's exact test as a diagnostic.

Actually, Dr. Bajaj actually explains the theory pretty well in his report, that it's -- it has to do with when the sample is relatively small, an adjustment to account for the binomial distribution not converging to the normal distribution smoothly.

But a better correction or adjustment or diagnostic is to use Fisher's exact test, and why he didn't do that or why he didn't base his conclusion on that is mysterious.

Q. Well, Fisher's exact test isn't a correction or an adjustment, is it?

A. It's a diagnostic of this z-test. It's an alt --

Q. Now, you used the word "diagnostic." In the academic community, the financial economist community, are the Fisher's exact

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test, the binomial test, and the bootstrap test commonly referred to as diagnostic tests?

A. Well, in this case, it is. I mean, it is -- that's what they are. I don't know how other people refer to them.

Q. It's not your experience that people generally refer to those tests as diagnostic tests?

A. I think they could. I mean, someone understanding what the issue here was, that there's a z-test, and there was a challenge to the z-test on the basis of the sample size. I think it's reasonable that someone would say, well, let's run the Fisher exact test as a diagnostic test to see if it supports the finding of the z-test or not.

Q. I'm just trying to understand how these terms are commonly used in your community.

Are these three tests -- the bootstrap test, the binomial test, and the Fisher's exact test -- commonly referred to in your economic community as diagnostic tests?

A. They're not commonly referred to,

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period, all of these tests, because there's a whole battery -- there's libraries full of statistical tests for different purposes. So that's why, you know, it's not something that would -- would be raised in a lunchtime conversation on a regular basis.

However, I mean, I'll grant that some people might consider these alternative tests. But when the alternative tests are run to confirm the original test, I think it's reasonable to refer to them as a diagnostic test.

Q. Now, what -- turning to the issue of dummy variables, do you remember discussing dummy variables in your rebuttal report?

A. Yes.

Q. Okay. What, if any, relationship is there between using a pooled approach and using dummy variables?

A. That's such a vague question.

I don't know. That's a better question for a take-home exam than an oral exam.

Q. Unfortunately, Mr. Markovits is only

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allowing me the verbal exam.

A. I don't know. I don't know what you're getting at. I don't know how to answer the question.

Q. Now, turning to paragraph 98 of your report, do you see that you discuss the issue of subinterval examinations?

A. Where? What paragraph are we on?

Q. Paragraph 98.

A. Yes.

Q. Okay. And you discuss this, the subinterval issue, in paragraphs 98 and 99?

A. Yes.

Q. And is it correct to say that it's your view that it was appropriate to examine the data in the Eletrobras case because the class period was longer than it is in this case?

A. Well, the longer class period allowed one to test, with a reasonably powerful test, subperiods. It wasn't necessary in Eletrobras, and it wasn't necessary in this case.

Q. So why did you do it in Eletrobras?

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A. Well, it was a longer class period so it was possible to run the test on subperiods, but it wasn't necessary there, either. It was possible to do it, so I thought maybe there's some additional information for a four-year class period could be gathered from doing it that way. But it was not necessary there, just as it's not necessary here.

But not only is it not necessary here, dividing up a 16-month class period into two or three pieces weakens the test. So when you find a nonsignificant or an inconclusive finding, it's not a finding about the market. It's a finding about the power of the test.

Q. Well, it weakens the test only because there were only so many dates that you tested using your New York Times/Wall Street Journal rule. Correct?

A. No. It weakens the test because it's a shorter period. It's a shorter period with necessarily fewer news events and fewer non-news events.

Q. So it was a weaker test than Eletrobras because you divided the periods?

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A. It would have been -- well, no. It was -- it would be weaker in this case to divide the period because each period would be smaller than the periods -- the divided periods in Eletrobras.

Q. Well, when you divided the periods in Eletrobras, did you create a situation where the test in Eletrobras was weaker?

A. Absolutely. The power of the test is weaker in those subsections. I believe in Eletrobras I may have also looked at it collectively. I just don't recall. But, I mean, when you divide a four-year period, it's not going to be as big an issue, as much of an effect on the power of the test as when you divide a 16-month class period.

Q. And why were you willing to make the test weaker in Eletrobras?

A. Because it didn't make the test much weaker when you've got a four-year class period to work with.

Q. And is there a way to measure how much weaker you make the test when you divide -- divide it?

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A. Well, I mean, there are -- there is analysis. There's test power analysis. What I -- again, I didn't think that was necessary to do, given that from my experience in statistical principles, a two-year period is plenty -- will produce a plenty strong enough test.

Q. Now, you earlier testified that by dividing the periods, you were able to obtain additional information.

Do you recall that?

A. Right. But it wouldn't be the case if you did it in a 16-month period, because, again, you'd be learning more about the test and the test power -- the test weakness, really -- rather than any weakness in the market.

Q. So let's talk about Eletrobras for a second. You said that in Eletrobras, by dividing the test, you were able to obtain additional information. Correct?

A. Right.

Q. What is the additional information you were referring to?

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A. Well, if the class period had been just the first couple years, would that class period have been provably efficient.

Q. In other words, you were able to identify additional information regarding the different stock price behaviors in the different periods?

A. Over a four-year period, that's a more relevant question than it is over a 16-month period.

Q. Why do you say that?

A. Less changes over 16 months than over four years. Less reasonably could change. More things can change over four years than would change over 16 months.

Q. Isn't it a fact that this was a particularly turbulent market in the latter half of 2007?

A. Right, which makes it particularly important that the event in the single-event study, single-event event study that was tested was during that most turbulent piece. If the data proved the market efficient using the most turbulent piece, you can infer that in less

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turbulent times, the market would have been behaving well, as well.

Q. So based on that one date event study, you believe you can draw inferences about what happened during earlier periods?

A. Well, that's the question you've asked so many times now, and I know I'm -- I want to give short answers, but I just wouldn't want to allow my answer to be taken out of context.

My conclusions are derived from a holistic examination of all the tests. I'm not going to -- I didn't draw it just from any one finding.

Q. Now, in terms of drawing this distinction between Eletrobras and this case, one case having a long enough class period to divide it into subintervals and this case not, what is the line? What is too long? What's too short?

A. I don't know. I never really had to consider that. I can tell you that -- well, see, the thing is you don't need to divide it up. It's just that in some cases you can. So

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that's why in this case it wasn't necessary to establish a bright line for how long would have been too long and how long would have not been long enough.

Q. What period is long enough such that you can divide it up?

A. I can tell you four years could easily be divided up. I wouldn't have a problem with dividing a four-year period up.

Q. What about three years?

A. I might. I don't know. I'd have to think about that some.

Q. Have you divided up class periods in other cases?

A. Yes.

Q. What other cases?

A. I don't recall, but I know I have.

Q. What's the shortest class period that you've divided up?

A. I don't recall. I'm sure you'll look it up.

Q. Shorter than four years?

A. Probably.

Q. Now, in Dr. Holman's report --

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strike that.

In response to Dr. Holman's report, Dr. Bajaj recognized a structural break on August 9, 2007. Correct?

A. He does.

Q. And --

A. And he says there was no break before that. That's what he said in response to Dr. Holman.

Q. I don't believe you're fairly characterizing the record, but we -- your counsel can explore that with you at another time.

Now, he found that taking that structural break into account affected Dr. Holman's calculations. Correct?

A. It affected his -- right -- his calculation of background volatility such that he challenged the finding of significance of one earnings date.

Q. Now, when you were tasked in this case with the assignment for testing for market efficiency, you tested whether Dr. Bajaj was correct about a structural break on August 9th.

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Correct?

A. Right.

Q. And you used a Chow test. Right?

A. Yes.

Q. Had Dr. Bajaj used a Chow test or was that your own idea?

A. I usually use a Chow test. I don't recall whether he did or not.

Q. Okay.

A. I think he might not have. But I don't recall.

Q. And based on your use of the Chow test, you discovered that Dr. Bajaj was correct. Right?

A. That it was reasonable to break the class period there for statistical purposes, not for market efficiency purposes. There was no reason that the market should necessarily be inefficient prior to that when it was easily observed to be efficient subsequent, although different statistics would -- calculations would have to be run separately for the two pieces.

Q. Right. Because the way you test for

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market efficiency is by using statistical techniques. Correct?

A. In addition to the Cammer and Unger -- other Cammer and Unger factors, which is one of the reasons those are important factors too.

Q. Well, when you have these different periods of time and you're assessing for market efficiency using statistics, the two different periods matter. Correct?

A. Right.

Q. Okay. Now, in response -- responding to your report, Dr. Bajaj recognized a structural break on February 27, 2007. Correct?

A. He proposed that there was one. It's not clear how he arrived at that when he previously said that there was constant volatility over that stretch of time prior to the break he previously said was the only break.

Q. Putting aside any characterizations or mischaracterizations of Dr. Bajaj's testimony, let me ask you this.

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When Dr. Bajaj identified a structural break on February 27, 2007, he criticized you for not taking that into account in your analysis. Correct?

A. I'm not sure he really did. He said there was one, but it's not clear whether he found it from data snooping or whether there really was one.

Q. You don't think he criticized you for not taking that into account?

A. No, no. I was taking issue with the premise of your question. You said when he found it. Depends what you mean by "found it." Does it really exist and he detected it, or did he go data snooping to find a date that he could say was a break? It's not clear.

Q. Well, regardless --

A. Given that he previously said he tested the data and hadn't found a break there, I went with the latter hypothesis that it's not a legitimate break and is just a statistical remnant of data snooping.

Q. Again, putting aside your mischaracterizations of Dr. Bajaj, let me ask

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you this.

MR. MARKOVITS: Objection. I believe it's not a mischaracterization. If you want to take that out of the question, you can ask him a question.

MR. FRANK: I'm going to ask him a new question. And you can ask him anything you want about Dr. Bajaj's testimony at another time.

Q. Dr. Bajaj criticized you for not taking into account a structural break on February 27, 2007, in your analysis. Correct?

A. Yes.

Q. Okay. And so you tested whether or not he was correct about there being a structural break there by using a Chow test. Right?

A. That's not quite accurate. I tested what a Chow test would show for that particular date.

Q. What did it show?

A. It showed that there was the appearance of a structural break, but it could be a spurious result found by Dr. Bajaj from

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data snooping.

Q. You didn't mention that in your rebuttal report, did you?

A. No, I do.

Q. Where in your rebuttal report do you state that you ran a Chow test on February 27, 2007?

A. I told you I checked his analysis. I checked his numbers. But I was not convinced that that was a legitimate break. It's page 34, part G. Dr. Bajaj's identification of an additional structural break appears to be an exercise in data snooping.

So I'm not disputing his arithmetic, but I am disputing his scientific method.

Q. Well, so let me be clear here, because I don't believe it says this in your report. So I just want the record to be clear.

You actually ran a Chow test on February 27, 2007. Is that correct?

A. Yeah. I believe so.

Q. And I understand it's your view that Dr. Bajaj may have found that as a result of data snooping. Is that right?

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A. Yes.
Q. Okay.
A. Meaning testing many different dates and when previously he concluded an exact opposite conclusion.
Q. Well, do you happen to know whether or not Dr. Bajaj tested many different dates?
A. Not for sure.
Q. You suspect he did?
A. Yes.
Q. Okay. Now --
A. And then concocted an argument as to why that would be a legitimate date.
Q. You suspect that?
A. Yes.
Q. Now --
A. And the reason for that suspicion is his abrupt and dramatic change in opinion from his prior report.
Q. Now, do you happen to know what the -- well, strike that.
Did you run the Chow test yourself or did someone on your team run the Chow test?
A. Someone on my team, and told me what

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was found.
Q. And what did they -- and who was that?
A. That would be Miguel.
Q. And what did he tell you he found?
A. That if you -- that if you did run a test on that date, it would indicate a significant -- a statistical structural break. Not a market efficiency break, but a statistical relationship break.
Q. And that information was something you took into account in drafting your rebuttal report. Correct?
A. Right.
Q. And do you happen to remember the numbers?
A. No.
Q. Did you -- do you still have those calculations?
A. I don't know. I mean, the purpose was just to, like I said earlier today, to verify his arithmetic and assertions.
Q. And you agreed with his arithmetic, if not his assertions. Correct?

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A. Yes.
Q. And you don't mention that you agree with his arithmetic anywhere in this report. Correct?
A. Probably not.
Q. Is there a reason why you left out of your report that you ran the Chow test on the February 27, 2007, date and that it confirmed that there was a statistically significant result on that date?
A. There's a reason.
Q. Yeah. What's the reason?
A. The evidence that it was data snooping, that this is not a legitimate scientific method result.
Q. And so, as a result, you didn't want to disclose to me or to the court that you had run a Chow test and identified that the calculation was actually correct regardless of how it was found?
A. That's not a fair characterization. It just wasn't relevant to the reply. What was more relevant was that it was clearly a -- clearly -- there were clear indications of data

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snooping.
Q. You don't think it was relevant to the rebuttal that there actually was a structural break on that date according to the Chow test?
A. I'm not sure there was. It says right here in 103, "Dr. Bajaj previously concluded that there was no structural break prior to August 2007."
Q. Where does he say in his testimony that there was no structural break prior to August 2007?
A. In his deposition, January 11, 2013, page 181, he said, "Well, there's a sudden spike on August 9th." That's August 9, 2007. "And if I recall correctly, the volatility during the control period" -- that's the earlier period -- "was almost identical to the volatility for the part of the class period until August 8."
So he's saying it's constant throughout.
Q. And so he was recalling from memory the volatility of a control period compared to

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the volatility for the part of the class period up to August 8th. Is that right?

A. Well, it's not just that. He's -- in his response to Dr. Holman, he said he ran structural break tests and found only this one.

Q. But is he saying --

A. He only reported -- well, just like you said, he only reported that one of August 9th.

Q. Do you know whether or not Dr. Holman reported statistically significant price movements on any dates prior to August 9th?

A. No. There were four nonsignificant and then the two. And he puts the break exactly on the day of the second -- of the first of the two significant earnings announcements.

Q. Of the two, there was one August 9th and one on November 20th?

A. Right.

Q. Now, is --

A. So that tells me that -- well, I'll wait for your question.

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Q. So there was no reason for Dr. Bajaj to attempt to identify structural breaks prior to August 9, 2007, was there?

MR. MARKOVITS: Objection. Calls for speculation.

You can make your arguments about why Dr. Bajaj came up with this new theory, but he -- you don't have to make the arguments to Dr. Feinstein. That's more for brief.

You're not questioning the witness now on what he put in his rebuttal report. You're just arguing with the witness and trying to excuse Dr. Bajaj changing his testimony in his report, which is fine, but why don't you do it in a brief rather than here today.

MR. FRANK: The witness has accused Dr. Bajaj in his rebuttal report of data snooping. I'm just exploring the basis for that accusation.

MR. MARKOVITS: I -- go ahead.

BY MR. FRANK:

Q. Now, in this document --

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A. In his deposition -- on page 35 of my report, I cite his deposition. He didn't just say he didn't test it. He said that the earlier period was consistent.

Q. Well, my question was was there a reason for Dr. Bajaj to attempt to identify structural breaks prior to August 9, 2007?

Are you aware of such a reason in response to Dr. Holman's report?

A. Yes. I mean, if he was really interested in running what he would consider to be valid statistical tests and that valid statistical tests have to be on periods where the dynamics are stationary, rather than winning an argument with another expert, he would have tested -- whatever -- whatever motivated him to look for a break now should have motivated him to look for a break then.

Q. Doctor, is volatility the only factor in assessing a structural break?

A. No.

Q. What are other factors?

A. The relationship among the variables in the model.

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Q. And what are the variables in the model?

A. Well, it's the return on the -- on Freddie Mac stock, the return on the PeerIndex, return on the market index, and an intercept term.

Q. Is that all?

A. Yes. I believe so, as I sit here now. Maybe I'm missing something. But as I sit here now, I think that's it.

Q. Now, let me turn your attention to paragraph 110 of your rebuttal report.

Do you see there you say, "Dr. Bajaj does not dispute that Freddie Mac stock exhibited a statistically significant price decline following the 20 November 2007 corrective disclosure"?

Do you see that?

A. Yes.

Q. And then in the next sentence, you say, "Dr. Bajaj does not dispute that the residual decline on 20 November 2007 following the corrective disclosure that day was negative 32.13 percent."

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Do you see that?

A. I don't think he disputed that.

Q. Now, do you see how you refer to the disclosures on November 20, 2007, as corrective disclosures?

A. Yes.

Q. In connection with your work on this case, have you formed a view that disclosures that Freddie Mac made on November 20, 2007, were corrective disclosures?

A. In the sense that they -- we talked about this last time, that "corrective" could either mean corrective of the information or "corrective" could also mean corrective of the inflation in the stock price.

And the allegation is that the events and the announcements of November 20, 2007, dissipated some artificial inflation that was in the stock price on that day and prior to that day, that the market would not have been as surprised by the news that day had they been fully informed of conditions in the company prior to that.

So corrective in the sense -- I'm

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actually just -- the word "corrective" is appropriate in the sense that the allegation is that that day and the news that day dissipated inflation.

Q. Now, are you aware that the plaintiff in this case has argued both that November 20, 2007, disclosures represented corrective disclosures or, alternatively, that they represented materialization of allegedly disclosed risks?

Are you aware of that?

A. First of all, allegedly undisclosed risks.

Q. Oh. I apologize. Let me do it again. You're exactly right. I misspoke.

Are you aware that the plaintiff in this case has alleged both that the November 20, 2007, disclosures represented corrective disclosures or, alternatively, that they represented the materialization of allegedly undisclosed risks?

A. My understanding is that plaintiffs' allegation is that the events of November 20, 2007, may have corrected the price but didn't

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necessarily -- weren't necessarily a production of information that corrected what the misunderstandings of the company were on account of alleged misrepresentations and omissions. So maybe the way you're using "corrective" and the way the plaintiffs use "corrective" and the way I'm using "corrective" are all -- are three different definitions.

But my understanding is that their argument is that it was a realization of the risk that day and that the stock price would not have fallen as dramatically had there been appropriate disclosure previously. That's the theory of liability.

MR. MARKOVITS: Jason, can we take a short break?

MR. FRANK: Sure.

THE VIDEOGRAPHER: The time now is 14:01. We're off the record.

(Recess taken from 2:01 to 2:18 p.m.)

THE VIDEOGRAPHER: The time now is 14:18. We're on the record.

BY MR. FRANK:

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Q. Dr. Feinstein, I am showing you a document that was previously marked as Exhibit 187.

Do you recognize Exhibit 187?

A. Yes.

Q. Now, allow me to turn your attention to the page 71 of 370.

Well, I'll back up.

What is Exhibit 187?

A. This is Dr. Bajaj's report in response to my report filed in this matter on September 1st.

Q. Thank you.

Now, let me turn your attention to page 71 of 370.

A. Okay.

Q. Do you see on page 71 of 370 there is a table that is entitled "Table 2"?

A. Yes.

Q. And this table is entitled not just "Table 2" but also "Dr. Feinstein's z-test and robustness check presenting his results collectively and separately for regression estimation periods, as he did in the Eletrobras

case, by correcting his event study regression model."

Do you see that?

A. I see it. I disagree with it, but I see it.

Q. You disagree that that's the title of the table?

A. No. I agree, but I don't think -- I disagree with what he wrote, that it's not correcting any event study regression model. If anything, what he's doing is intentionally eviscerating the power of the test.

Q. But you have no dispute that that is how he labeled his table?

A. Correct.

Q. Okay. Now -- then underneath that title, it says, "Freddie Mac collective test robustness checks."

Do you see that?

A. I do.

Q. Okay. And then it has two -- the table kind of has two sections. Right? One is "WSJ/NYT News Event Days" and the other is "WSJ/NYT News Event Days Excluding Alleged

Corrective Disclosure."

Do you see that?

A. Yes.

Q. Okay. And did your team double-check all of the calculations in this table?

A. Probably not.

Q. So you, as you sit here today, you don't have any reason to believe that these calculations are incorrect, do you?

A. Arithmetically?

Q. Let's just deal with arithmetically right now.

A. I have no reason to believe not.

Q. Okay. Now, do you understand what the first column is doing that is labeled "Dr. Feinstein Estimation Period 1a, 1b, and 2"?

A. I thought I did, but now that I look at it, I'm puzzled. There's something wrong.

Q. Just let me know when you've had a chance to review everything you wish to review.

A. All right. I -- well, you correct me if I'm wrong. Do you want me to tell you

what it is?

Q. What you understand it to be.

A. So he's running the -- he's testing for the statistical significance of the news and non-news days, but use -- across the entire class period in the first column, but using different regressions for each of the three periods that he purportedly identifies.

Q. If he takes into account the February 27, 2007, structural break, what effect does that have on the statistical significance of the Fisher's exact test results?

A. Well, he says that it would not be significant at the 5 or 10 percent level.

Q. And do you disagree with his calculation?

A. I don't -- like I said, I don't -- what I disagreed with when I read the report was that it was necessary to break the period into three periods. So that's why I wasn't as involved in verifying these numbers. The entire approach is misguided. But I -- as I sit here now, I don't have a reason to dispute

the arithmetic. I do dispute the conclusions.

Q. Now, when he takes into account the February 27, 2007, structural break, what effect does that have on the statistical significance of the bootstrap test results?

A. I take issue with you saying he takes into account the break, because you're assuming that there is, in fact, a break there and that it needed to be taken into account and that it was appropriate to run a separate regression. I dispute all of that. But, nonetheless, if you do that calculation arithmetically, you arrive at these numbers.

To me, as I read this, it looked like he was bending over backwards to try to arrive at numbers like this that just barely fall outside the 10 percent significance level or 90 percent confidence level.

Q. Well, your Chow test indicated there was a structural break in February 2007. Right?

A. No. My Chow test said that if you go -- that it -- but it could be spurious, that there was some -- I didn't dispute his

arithmetic, but I disputed his scientific process in concluding there was, in fact, a break there.

Q. What was his scientific process?

A. Well, that's the problem. I mean his process clearly was different from what he had applied in this very case earlier. He went looking for more breaks.

Q. You don't know what his process was, do you?

A. His process was that while he previously concluded there were no previous breaks, he now wanted to find some reason to break the regression period up into smaller pieces. That seems to be what his process was.

Q. That's your speculation?

A. No. No. That's what he did. I mean, it's clear. It's indisputable that he previously testified there were no previous breaks. He previously found no previous breaks. And now, when he found a need to try to cast some doubt on my findings, he's changing his position and saying there is a break.

Q. He never testified that there were no previous breaks. You're just making that up, aren't you?

A. Not at all. I wrote -- I cited it in my report, the portion of his deposition where he said that the prior period was constant, and he also reported no prior breaks earlier in his earlier work, studying the very same data. The very same data.

Q. When you said you cited in your report, that was the volatility comment that you had read to us earlier into the record. Is that right?

A. Right.

Q. Now, the binomial test results, turning to that, when he takes into account the February 27, 2007, structural break, what does -- what effect does that have on the statistical significance of the binomial test result?

A. I take issue with the way you're phrasing the question. I mean, take into account, when he -- what we should say instead -- I'll answer the questions if you

phrase it this way.

When he breaks the period up into smaller regression samples, he's going to have a weaker test that finds inconclusive results each time.

Q. So assume for the sake of my next question that there actually is a structural break on February 27, 2007. Can you do that?

A. Okay. I'll assume the hypothetical.

Q. Assume that --

A. And that it was found without any data snooping or without any data or conclusion-driven process. Results -- without a results-driven process. Without an objective of making it look like the news events behaved no differently than the non-news events.

Q. Well, here's the thing. Here's your problem. I'm allowed to choose the hypotheticals, so here's the hypothetical I'm going to choose.

A. Okay.

Q. Assume you ran a Chow test on your own, without anyone else suggesting it to you, that identified a structural break on

February 27, 2007, and that you came to believe on your own that there actually was a structural break on February 27, 2007. Okay?

A. Okay.

Q. Assume that.

A. Right.

Q. Do you have any reason to believe that the calculations that Dr. Bajaj included in his report in the first column of Table 2 on page 71 of 370 is inaccurate in any way?

A. Under that hypothetical, no.

Q. Now, let me ask you this. Turn your attention, please, to paragraph 142 on page 63 of 370.

A. Oh, I --

Q. Page 63 of 370. Page 63 of 370.

A. Okay.

Q. Okay. Do you see paragraph 142?

MR. MARKOVITS: Page 63 of 370?

MR. FRANK: I'm trying to help.

Q. Do you see in paragraph 142 --

A. Yes.

Q. -- it says, "There are at least three primary pieces of economic evidence

establishing a structural break on February 27, 2007"?

Do you see that?

A. I do.

Q. It says, "First, the VIX index and implied volatility for Freddie Mac stock starting on February 27, 2007, through August 8, 2007, nearly doubled from their prior levels over the previous year."

Do you see that?

A. Yes.

Q. Did you or anyone on your team check to see if that was true?

A. We looked at his graph. I looked at his graph.

Oh, wait.

Q. Did you --

A. Let me -- what does he -- he cites to Appendix VIII. And if you look at his graph, and you look at the 30-day implied volatility, you see that for much of this --

MR. MARKOVITS: What's the page number at the top?

THE WITNESS: 128.

A. If you look at August 1, 2006, we're north of 20 percent for the 30-day implied volatility. Again, why he chose that one instead of others is left unanswered. But we're north of 20 percent. And if we look at much of the period around April 2007, we're in the same ballpark.

Q. So you disagree with the statement that the VIX index implied volatility for Freddie Mac stock starting on February 27, 2007, through August 8, 2007, nearly doubled from their prior levels over the previous year?

A. Based on his own Exhibit 8, that would not be accurate for all dates.

Q. Well, putting aside whether it's accurate for all dates, did you disagree with the statement generally?

A. Yes.

Q. Okay. And did you include that in your rebuttal report?

A. No. And it's that I described that I thought his scientific process was lacking and that I relied on the fact that he hadn't argued that there was a structural break ever

before, even though he examined the very same data previously.

Q. And so looking at Appendix VIII, you don't see the difference between the period leading up to February 27th and the period after February 27th?

A. Well, I see -- if you look just locally, there's a difference. But if you look at the entire period, you see there's plenty of dates within the August 1st to February 2007 -- August 1, 2006, to February 1, 2007, that are the same level subsequently.

There's a bubble right at the beginning and there's, of course, a -- he wants to -- he wants to run the test for February -- for these dates around February. He wants to run the test for February 27, 2007, on a period that includes August 1, 2007.

So there's his problem. He's saying that this first hill in the end of February '07, beginning of March '07, is identical and stationary relative to this period at the end of the graph.

Q. Well, he actually --

A. And that's just not right.

Q. He actually did an average from August 1, '06, to February 26, '07. Right?

A. Well, I know about the average. But as far as running the test, he wants to use this -- he wants to use this period from February 27, 2007, I believe it's through August of 2007, as one regression period.

Q. Doctor, I assure you it will go so much faster if you answer my questions. I'm really -- that's the way this works.

So if you look at Appendix VIII, he put on Appendix VIII the VIX average from August 1, '06, to February 25, 2007. Correct?

A. Yes.

Q. And that average was 11.5 percent. Correct?

A. Yes.

Q. And then he also put the VIX average from February 27 to August 8, 2007. Correct?

A. Right.

Q. And that average was 15.19 percent. Is that right?

A. I'm not going to dispute that you're

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reading the table right. You're just interpreting it wrong.

Q. And --

A. Because what he did with that is he said that let's run an event study on -- for a date, February 27, 2007, assuming that the dynamics on that date are the same as the dynamics on August 1, 2007.

Q. Now, did he also say on paragraph 142 of his report -- that is, page 63 of 370 -- did he also say, "Second, there were a series of marketwide events that appeared to roil financial markets, resulting in a sharp marketwide stock market decline, the largest since 2001, amid subprime mortgage problems and fears of recession"?

Do you see that?

A. I see it.

Q. Did you disagree with that statement?

A. That's not what happened on February 7, 2007.

Q. Well, do you see, in Footnote 168, he says, "On February 26, 2007, former fed

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chairman Alan Greenspan warned of the possibility of a recession in 2007"?

Do you see that?

A. Right.

Q. Do you have any reason to believe that statement was false?

A. No.

Q. And do you see then he says -- he writes, "The next day the Dow Jones Industrial Average fell 3.3 percent, its largest drop since 2001, following a similar sharp decline in China Shanghai Composite Index"?

A. Yes.

Q. Do you see that?

A. I do.

Q. Do you have any reason to believe that was false?

A. No.

Q. Okay. Now, then he says -- back to paragraph 142 -- "Third, the use of Dr. Feinstein's Chow test when applied to Dr. Feinstein's market model to analyze the periods from August 1, 2006, to February 26, 2007, and February 27, 2007, to August 8, 2009,

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yield a" -- "yields a result statistically significant at the 95 percent confidence level, demonstrating that 'there was a structural change in the regression relationship.'"

Do you see that?

A. Yeah.

Q. And you understood he was quoting your report there. Correct?

A. Where? What paragraph?

Q. So if you read what I just read, at the end, he drops Footnote 169, and then he -- that footnote says "Feinstein report paragraph 126."

Do you see that?

A. No.

Well, he's not -- that quote -- that quote doesn't refer to February 27, 2007, in my report.

Q. No. Presumably that quote addresses the use of your Chow test in reference to August 9, 2007. Correct?

A. That's right.

Q. And he was just applying your language in the same way, given that he had

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used your Chow test in the same way he -- you had used it. Correct?

A. That's your characterization, not mine.

Q. Do you disagree with that?

A. I disagree that what he did was a legitimate structural break investigation.

Q. Do you in your rebuttal report deal with the three primary pieces of economic evidence that he discusses in paragraph 142?

A. In the sense that I know that you can go and look for evidence to support a conclusion that you posit a priori.

Q. And do you have any reason -- putting aside your accusations of data snooping, do you have any reason to believe that February 27, 2007, wasn't a structural break in the market for Freddie Mac securities?

A. With the emphasis on putting aside the flaw in the analysis, that is the flaw in the analysis.

Q. Your view is that the reason why February 27, 2007, shouldn't be considered is solely because it's the result of what you call

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data snooping?

A. And that he never identified it before having analyzed the same data. And he testified, at least with respect to volatility, which is what the VIX and the implied volatility are about, that there was stationary over that period of time. He previously concluded that, having analyzed this very same data.

Q. And those are all arguments you made in support of your data snooping contention. Correct?

A. Yes.

Q. And so the reason why you believe February 27, 2007, shouldn't be considered as a structural break is because you believe it was identified as a result of data snooping. Right?

A. Yes. And the problem with data snooping is there may be -- either it's not a legitimate date altogether or there may be another date that's even better to use.

Q. Now, how do you explain the fact that the Chow test resulted in a statistically

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significant result?

A. Data snooping. That's my explanation.

Q. So, in other words, even though the result is statistically significant, it should be disregarded because of the way in which it was discovered?

A. We call that, in statistics, spurious significance, if it's found in a process that violates scientific process.

Q. But if it were to be found that Dr. Bajaj did not engage in data snooping, you would then accept -- you would then accept February 27, 2007, as a structural break date?

A. Not necessarily.

Q. Why not?

A. Well, there might be other days that are a better day to place the break, in which case the subsequent test, follow-up test, would have to be run over different periods.

Q. Did you do that?

A. No.

Q. Why not?

A. Because I -- because I concluded

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from comparing Dr. Bajaj's reports and testimony in this case for this -- before my report and after my report, that it was data snooping. It just shouldn't be taken seriously, that finding, because of -- he previously said that there was stationary, there was no break there, and now --

Q. But --

A. -- now that it's convenient for his new purpose, he changes his tune.

Q. Well, putting aside whether he actually said what you just said he said, what -- did you make an effort to look for any structural breaks over the period?

A. I did. I looked to see whether what he said about Dr. Holman's analysis was accurate, and I accepted that.

Q. But did you independently look for any dates that might represent a structural break?

A. Personally, I did not.

Q. Did anyone on your team?

A. They may have. I just don't recall.

Q. Is it a good idea to look to see

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whether or not there are any structural breaks when you're trying to assess market efficiency?

A. Not necessarily.

Q. It's not something that you would advise your team to do?

A. It depends. There was a break that was identified that split the class period. I know that -- and I -- I know that if you divide the period into smaller and smaller pieces, you weaken the test, not the market.

In other words, you're going to find inconclusive results from the test, not because the market is inefficient but because your tests are eviscerated. And given that he previously testified that they were stationary over the period prior to the latter break, I accepted that.

Q. Do you think that Dr. Holman engaged in any data snooping?

A. I didn't assess one way or the other.

Q. You don't have a view one way or another?

A. Correct.

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Q. He may have?

A. Well, if I don't have what -- I have -- I don't have for Dr. Holman what I have for Dr. Bajaj, which is reports written before and after my report. Dr. Bajaj's assignment changed and then suddenly he starts changing his conclusions. That tells me something. And I don't have that same information about what Dr. Holman either did or would have done.

Q. Did any of your conclusions change from your first report to your second report?

A. No.

Q. In your view, are there any new conclusions in your second report?

A. Well, the first report didn't explicitly have the diagnostic test and they're in the second report. They're presented. They were presented between the two reports as well, but they're in the second report.

I was not -- there was no opportunity to address price, the price impact argument of Dr. Bajaj previously, so that's new.

Certainly I -- my reactions and

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responses to Dr. Gompers and Dr. Bajaj could not have been in my first report and they're in the second report.

Q. Why were your diagnostic tests set forth in your second report?

A. Well, for completeness. I mean, they were cited in the deposition, they were provided to us in exhibit, and for completeness of the record it made sense to put it in.

Q. But you didn't think it made sense to put in the rebuttal report your Chow test on February 27th for completeness?

A. That was just -- like I said, that was just verifying what we thought was his arithmetic.

Q. Now, in connection with -- do you remember testifying earlier in connection with the weak-form efficiency that one of the issues that you believe create a problem for assessing weak-form efficiency is time-varying risk premia?

A. Right.

Q. What are time-varying risk premia?

A. Essentially it means that -- that

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investors have different appetites for risk, potentially different appetites for risk, and that that might change over time.

But specifically in Stephen LeRoy's work where it comes into play is that as a result of a drop in the stock price, people may become more risk-averse such that the demand for the security actually falls and then the stock price may fall again.

So you may have a -- the fact about how a stock price change might change risk preferences or aversion could actually impose an autocorrelation process on the stock. And that's why -- and it would be perfectly rational, and it may even be predictable, but it wouldn't be a true arbitrage opportunity or even a profitable opportunity consistent with people's appetites for risk.

Q. So can you explain to me, using very small, simple words, how time-varying risk premia creates an issue that prevents weak-form efficiency tests from accurately identifying weak-form efficient markets?

A. Maybe.

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What might be better is just to direct you to the literature, and you can read the abstract and the conclusion. And it's quite clear from the literature. But essentially what these authors explain is that in a perfectly rational and perfectly efficient market, where all information is being received, there's no impediments to information, it's being traded on, it's being digested, and all actors are rational, they -- the price may still have autocorrelation. A drop in a price may foretell a subsequent drop in the price, even though the market's efficiently processing information and all investors are rational.

That's what the models show, that that is possible, if not the actual likely depiction of what's going on in the marketplace.

Q. And how does that relate to time-varying risk premia?

A. That it -- a change in the price causes investors' appetites for risk to change, which then causes another change in the price.

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Well, here. Again, I mean, it's -- I know the conclusions of the reports. I know that if I had the opportunity I can prepare a lecture with a PowerPoint slides, you know, for interested parties.

But essentially it's this. Suppose you invest in the stock market or a particular stock, and then you lose money. You're now poorer. As a result of being poorer, you're now going to be more cautious, so you're going to pull some of your money out of the market. That makes the market go down again. There's nothing irrational about that, and yet it would be an autocorrelative process.

And there's nothing about that that says that you're ignoring information. It simply says that you're processing it now in light of the fact that you are a little more afraid of the market.

Q. And are economists unable to value time-varying risk premia such that it -- they can't adjust for it in these weak-form efficiency tests?

A. That's what the articles say. The

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articles say that when you observe zero correlation, it's not an inefficiency in the marketplace. It's how rational people react to fear. How rational people react to rational caution and optimization of their investment decisions.

Q. And is time-varying risk premia the sort of thing that you can calculate on a daily basis such that it can be adjusted for?

A. Potentially, yeah. Potentially. There are measures of sentiment and there are measures -- there are implied risk premia measures that can be accounted for and adjusted for and incorporated into these valuation models.

Q. And if that's the case, can't a weak-form efficiency test adjust for time-varying risk premia?

A. I've never seen it done. That's actually a pretty good suggestion. I think you -- I think someone might be well-advised to do literature in that area.

Q. But you haven't seen any literature on that subject?

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A. Not as I sit here now, I don't recall. It's possible it might have been another paper or that I'm just not thinking of it right now. It's possible that it's out there.

Q. But you're not aware of any economist that's ever valued time-varying risk premia?

A. No. No, I think they do. There are articles. Yeah, I'm quite sure there are articles that seek to identify changes in risk preferences. But relating it specifically to show -- as I sit here now, I don't recall any that related specifically to a finding of serial correlation in prices. I might be wrong, as I sit here now.

Q. As you sit here now --

A. I don't have the bibliography memorized. It's a good research topic, so it's likely that someone out there tackled it at some point. I just couldn't cite it for you.

Q. Well, as you sit here now, is time-varying risk premia a problem associated with the assessment of weak-form efficiency

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markets or not?

A. What they do is they disallow you from concluding from a finding of serial correlation that the market is weak-form inefficient.

Q. And you're just not aware of any research that suggests that you can value time-varying risk premia such that you can adjust for it in a weak-form efficiency test?

A. That's right.

Q. And are you aware of any research indicating that you can value time-varying risk premia in other contexts?

A. Yes. I think there is -- there is literature on assessing changing market preferences for risk.

Q. And what literature do you have in mind, if any?

A. I don't have it memorized. I couldn't cite it for you as I sit here now. I can certainly cite it for you when I get back to my office and have my sources available.

Q. Mr. Markovits will not allow me to accompany you to your office.

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MR. MARKOVITS: If you ask nicely.

Q. So we have to go based on your memory here.

A. Your question is, can I cite for you the literature? No. Am I aware that there's some literature? Yeah.

Q. Can you identify any author or any publication?

A. No, not now.

Q. All right.

MR. MARKOVITS: By the way, if you do that study now, you have to give Jason partial credit.

MR. FRANK: At least a footnote.

MR. VOLPE: Yes. Put in a footnote. That's what I was just going to say.

Q. Okay. Now, in a case -- strike that.

So you understand that, in a securities case, defendants are entitled to attempt to rebut any presumption of price impact. Right?

A. Yes.

Q. Okay. And in a case involving

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materially false statements, does it make sense to test the dates on which the statements were made?

A. It makes sense, but I don't think that would be the end-all of the required analysis.

Q. What other dates -- and you testified earlier that you think that someone should test every date in the class period. Is that right?

A. Well, if you could approve that a piece of information had no price impact, you've got to look at a lot of dates.

Q. Well, let's use a simple hypothetical. An alleged lie on Monday, allegedly the truth comes out on Friday. You would think that an expert trying to assess market impact would test the dates Monday and Friday. Right?

A. If it's known with certainty that nothing relevant -- I mean, it would be an assumption, not a conclusion, that nothing relevant happened on Tuesday, Wednesday, and Thursday. But that's an assumption that would

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have to be proved by whoever was trying to assess that the information -- that the lie had no impact on the press. They would --

Q. But is that --

A. It would make sense to test Monday; it would make sense to test Friday. But if you really want to prove that the lie had no impact, you couldn't just assume that nothing happened on Tuesday, Wednesday, and Thursday.

Q. So if you see stock prices rise on Wednesday, you should test that. You see it rise on Wednesday, and you'd want an expert to do what? Try to --

A. Address -- address that it -- either with reference to valuation principles or reference to statistical testing. Could be either one. Address that day and that price to rule out that it had anything to do with the alleged lie.

Q. And if you wanted to argue that there was price impact, what dates would you look at?

A. Well, that's an interesting thing. You have an easier job. You have an easier

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job. If you can prove that the price moved when the lie was corrected, that establishes it. You don't have to also prove that there was impact on Thursday and Wednesday and Tuesday. Proving that it had an impact on Friday proves that it had an impact, so you would look at Friday. Friday would be the most reasonable day to look at. Monday would also be reasonable, because there may be proof. There may be evidence there.

If you stopped and there was no impact on those two days, you had -- you would not have proved it, but you'd be perfectly free to also look at Tuesday, Wednesday, and Thursday.

Q. Now, take -- let's take our hypothetical. There's a complaint. The complaint alleges lie on Monday; truth came out on Friday. Okay?

What does one need to do to assess whether or not there was a price impact of the alleged lie on Friday?

A. Lie -- the lie is on Monday; the truth comes out on Friday?

Q. Right.
A. Well, you would have to see if there -- well, you want to prove that there's no price. You want to test whether or not there was no price -- I'm getting confused here.
What would you have to do in order to -- can you please just repeat the question?
Q. Sure.
The complaint alleges -- okay. Let's take our hypothetical. There's a complaint. The complaint alleges a lie on Monday. Truth came out on Friday. What does one need to do to assess whether or not there was a price impact of the alleged lie on Friday?
A. Okay. So in your hypothetical, the truth comes out on Friday?
Q. That's the allegation.
A. Okay. You'd want to test a number of things. You'd want to see whether there was any movement in the price whatsoever on Friday, significant or otherwise. You'd want to see whether the information, according to the

literature, the finance literature, all the people that have studied price impacts before us, whether that information is considered material information. You'd want to see whether the company ever represented that information to be material information. You'd want to see whether analysts have ever cited that information as being material information, relevant information, or arguments in their valuation models. You would look at whether that information reasonably has a role in generally accepted valuation models.
Then you can also just empirically examine whether, in fact, if there was a statistically significant movement, can it be explained entirely by other factors that are unrelated to the lie.
Those are the things you'd have to do -- those are the things you could do to assess whether it did or did not have a price impact.
Q. Now, let's change our hypothetical a little bit. The lie isn't an affirmative statement. It is an omission.

So there's a complaint. The allegation is that there is an omission on Monday and the truth comes out on Friday. Does that change your analysis?
A. Well, if the burden is to prove that there was no price impact, you would have to show that the information was, according to all those sources -- the company, finance literature, analysts -- has no role in the valuation of the security. Or you mean -- you said there was an announcement about that lie or you could also see there was no information about that lie provided that day, no information provided in any way about that lie that came out on Friday. Either of those could be used to prove no price impact.
Q. So is it fair to say that in assessing whether or not there's price impact, one needs to look at the date on which the truth allegedly came out and determine whether or not that information actually was the alleged truth or the allegedly concealed information?
A. That's one thing you'd look at.

You'd also look at whether the truth, by virtue of it being the truth and by virtue of it coming out had an impact on the stock price. Maybe it had an impact on performance of the company. I mean, maybe there wasn't a mere corrective disclosure. Maybe it wasn't an announcement that previously we lied and now we're telling the truth. But maybe there are developments that are disclosed on that Friday that would -- that were surprising because there had previously been a lie about it and it wouldn't have been surprising had there not been a lie about it. You'd have to look at that, too. That's something you'd need to look at.
Q. Now, in this case, did you reach a determination as to whether or not November 20, 2007, constituted a corrective disclosure date or not?
A. Let me be real careful and just make sure that I'm going to use the same words now that I used before.
I think there's a lot of evidence I observed that would suggest that there was

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price impact. But my conclusion, my formal conclusion is that Dr. Bajaj did not prove price -- no price impact.

Q. Okay. So my question was a little --

A. He failed to prove no price impact. I am not specifically saying there was.

Q. Okay. Let me re-ask my question, and I want you to let me know whether you have a different answer upon listening to it again.

Now, in this case, did you reach a determination as to whether or not November 20, 2007, constituted a corrective disclosure date?

A. How are you defining "corrective disclosure date"?

Q. Well, what do you understand the phrase "corrective disclosure date" to mean?

A. Well, it could mean a number of things. It could mean a date when previous misunderstandings are -- about the company were corrected, so that the information is corrected. So if the market was previously misled to believe something, they -- their understanding was correct. So it could be a

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correction of information.

It could be corrective of price inflation where prices inflated on account of misrepresentations and omissions, and then something happens on that date that causes that inflation to dissipate.

So those are two different things that it could mean. I did not draw a conclusion that I presented in either report that says that November 20th was a corrective disclosure date. It's essentially -- I'm assuming the allegations for that purpose.

Q. For the purposes of assessing price impact, you assumed that plaintiffs' allegations were true?

A. Yes. That there were misrepresentations and omissions. I observed that there was negative news on November 20th that did make the stock price go down. That's my conclusion.

Economic theory says -- now, plaintiffs -- plaintiffs allege that the price went down because of factors related to the misrepresentations and omissions, and the

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market would not have been as surprised and that the price went down because of some information that was disclosed that was corrective, specifically corrective of prior misrepresentations and omissions.

So the piece of that that's my own conclusion is that the price went down on November 20th specifically because of the negative news, the negative company-specific news. But it's -- but I'm assuming from plaintiffs' allegations that that news was related to the misrepresentations and omissions.

I mean, that's -- the assumption is a reasonable one and that it's also supported by economic theory.

Q. So just so that I'm clear, you assumed for the plaintiffs' allegations that the news that came out on November 20, 2007, was related to the misrepresentations and omissions that plaintiffs had alleged in their complaint?

A. Actually, I didn't -- I mean, for purposes of market efficiency, I didn't need to

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do that. But starting with that assumption, that would tell me what Dr. Bajaj would have to do -- he would have to disprove that in order to prove no price impact.

Q. Well, let me just be clear. Let's talk about price impact.

A. Okay.

Q. And you offered opinions on price impact. Correct?

A. Well, no. The opinion on price impact is that Dr. Bajaj proved nothing.

Q. Well, don't you say in your report on page 7 -- 37, page 37, in subheading 1, don't you say, "The statistically significant decline in Freddie Mac stock in response to the November" -- "to the 20 November 2007 disclosure event which Dr. Bajaj does not dispute is direct evidence of price impact"?

A. I do. That's what I said before. I said there was plenty of evidence I observed in the course of this analysis and writing this report that is supportive of price impact, but I didn't draw the conclusion that there was price impact. My conclusion is Dr. Bajaj

proved nothing with respect to price impact.
Q. So -- and I'm -- just to be clear, you are not offering an opinion in this case as to whether or not the alleged misrepresentations or omissions actually caused price impact?
A. My conclusions are on page 3, 4, 5, and 6. There's 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 paragraphs.
The report speaks for itself. But, yeah. The answer is yes.
Q. Just in the event that there's any confusion, your conclusions are laid out in a section of your report entitled "Conclusions" on page 3, which go to page 6. And I should not -- I shouldn't interpret headings elsewhere in the report as your conclusions. Is that fair?
A. Well, no. The heading is that there's plenty of evidence of price impact which a valid test of price impact -- which Dr. Bajaj purports to have conducted -- should have addressed. That's why that heading on page 37 is there.

But I -- I don't -- I just want to make sure. I don't recall that I came right out and said I found there to be price impact and my conclusion is that there was price impact.
My conclusion is that he did not prove that there was no price impact.
Q. And so, to be clear, your opinion with respect to the price impact issues in the case is solely that Dr. Bajaj has failed to establish a lack of price impact. Is that correct?
A. Right.
Q. You are not --
A. Well, no, no. And that he failed to address direct evidence of price impact appropriately.
Q. Okay. But you are not offering an opinion that the alleged misrepresentations or omissions in this case actually resulted in price impact. Is that right?
A. That's a loss causation argument, a loss causation analysis which I have not yet conducted.

Q. You're not opining that the alleged misrepresentations or omissions caused price impact. Right?
At this stage.
A. You said concluding -- I have not -- I am not offering a conclusion at this stage, right, at this stage, that there was loss, that there was price impact.
What I am concluding is that he did not prove no price impact. He looked at some areas related to price impact but simply wasn't comprehensive enough to rule it out. And he didn't deal appropriately with the direct evidence of price impact.
Q. And when you say "direct evidence of price impact," what are you referring to?
A. The company announced a $2 billion loss on November 20, 2007, and they provided -- you know, in explaining where that $2 billion loss came from, they talked about their exposure to subprime mortgages, their exposure to nontraditional risky mortgages.
The decline that occurred on that day that was clearly statistically significant,

indicating that it was caused by company-specific news, is direct evidence of price impact. I mean, the information that was available that day is that it had a lot to do with the allegations of representations and omissions, the substance of those allegations. That's direct evidence.
That's what I mean. The drop. The allegation that the drop was caused by what was previously -- at least in part, by what was previously concealed from investors. It has to be dealt with appropriately, and he didn't deal with it appropriately. He kind of brushed it off.
Q. I'm showing you a document that's previously been marked as Defendant's Exhibit 30.
Defendant's Exhibit 30 is the third amended complaint in this case. Have you ever seen Defendant's Exhibit 30 before?
A. Yes.
Q. Okay. Have you read it?
A. Yes.
Q. Okay. I want to draw your attention

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to paragraph 2 of the third amended complaint.
Do you see paragraph 2?
A. Yes.
Q. Paragraph 2 says, "Throughout the class period, defendants made a series of materially false and misleading public statements relating to, among other things:
1. Its exposure to or risk of loss from subprime mortgage loans and other nontraditional high-risk mortgages, including Alt-A mortgages (a mortgage industry term to describe reduced documentation/ higher credit risk loans);
2. Its underwriting guidelines and defendants adherence to those guidelines;
3. Its loan analysis software and fraud detection systems;
4. Its risk management measures and its risk management performance;
and, 5, its capital position."
Do you see that?
A. I do.
Q. Okay. So is it your understanding that plaintiffs have alleged that defendants

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made a series of materially false and misleading public statements about these five different subjects?
A. No. It mean -- you said is it my understanding -- it is my understanding that this is what they have done. Yeah, that that's what plaintiffs are alleging.
Q. Okay. Now, in --
A. I'm not independently verifying that is my point.
Q. I understand. That's your understanding of their allegations?
A. Right.
Q. All right. And did you look at the company's disclosures on November 20, 2007?
A. Certainly.
Q. You looked at the press release?
A. Absolutely. The press release, the information statement, and the conference call.
Q. And the information statement and the press release and the conference call, were there any statements in there regarding the company's loan analysis software and fraud detection systems?

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A. I don't recall that there was.
Q. Were there --
A. I mean -- I mean -- I don't want to say that none -- the point is not explicitly, but plaintiffs' allegations are that the failures and the deficiencies in that area is what caused the negative news that the company disclosed that day.
Q. For the purposes of your price impact work, you assumed those allegations to be true?
A. No, that's not -- that's not accurate. I didn't need to, but I did -- I did seek to determine whether Dr. Bajaj dealt with that linkage, and he simply did not. There's a linkage there and he simply did not deal with the possibility that it was the failures in the company's risk control and fraud detection and risk analysis systems that led to the $2 billion loss, the cut in the dividend, and the vulnerable capital position that was announced that day, November 20th.
Q. Let me show you a document that has been previously marked as Defendant's Exhibit

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No. 27. Defendant's Exhibit No. 27 is the company's annual report from 2006.
Have you ever seen this document before?
A. Yes.
Q. Let me turn your attention to page 69.
A. Okay.
Q. Do you see on page 69 it says -- actually, first, let me turn your attention -- yes. Let's stick on page 69.
On page 69, do you see where it says, at the top of the page, "During the past several years, there was a rapid proliferation of nontraditional mortgage product types designed to address a variety of borrower and lender needs, including issues of affordability and reduced income documentation requirements."
Do you see that?
A. Yes.
Q. Okay. And by the way, can you turn to the front of the document.
Do you know when this document was made public?

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A. March 23, 2007.

Q. So this was in the middle of the proposed class period here. Is that your understanding?

A. Correct.

Q. Okay. Now, turning back to page 69, it says, "While features of these products have been on the market for some time, their prevalence in the market and our total mortgage portfolio increased in 2006 and 2005."

Do you see that?

A. Yes.

Q. Did you understand that Freddie Mac had disclosed to the market that the prevalence of nontraditional mortgage product types in its portfolio increased in 2005 and in 2006?

A. Oh, I knew about this language, but I also know --

MR. MARKOVITS: I'm going to object. This is well beyond the scope of his rebuttal report. There's no link between any opinion he's given in his rebuttal report and these questions.

MR. FRANK: There is a direct link

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if you read his rebuttal report and in particular the sections on price impact.

MR. MARKOVITS: No. Because he's -- he's assuming, just as Dr. Bajaj did, for the purpose of his analysis, the truth of the allegations.

Dr. Bajaj, if you recall, testified that for the purposes of price impact, he assumed the truth of the allegations and misrepresentations and omissions. He was not opining whether the non -- the extent of the exposure to nontraditional mortgages was appropriately disclosed or was not, just like Dr. Feinstein did not in his rebuttal report and is not today opining whether those disclosures were made or were not made.

He's assuming, just as Dr. Bajaj did for price impact, because discovery is not closed, that the allegations are true. And then the only question is, assuming the truth of the allegations and knowing that the stock declined 20 percent on November 20th, can you rule out price

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impact?

That is the burden of the defendants. It's not the burden of the plaintiffs to prove price impact at this time in time. It's not the burden of Dr. Feinstein to opine as to the truth of the allegations in the complaint.

So there is no link between this truth on the market defense that you try to keep putting forward in the briefs. Truth on the market defense has no place at this stage of the case, and it certainly has no place in this deposition because Dr. Feinstein is not opining as to the truth of the allegations of the complaint for the purposes of his rebuttal report.

BY MR. FRANK:

Q. Dr. Feinstein, allow me to turn your attention to paragraph 130 of your rebuttal report. So leave the annual report open for a second and just turn back to your rebuttal report and turn to paragraph 130, please. It's on page 47 of 70.

Now, do you see there in

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paragraph 130, you wrote, "The company's disclosures and its information statement on 20 November 2007 establish the connection between exposure to subprime and nontraditional mortgage products and the company's reported poor results and weakened capital position."

Do you see that?

A. Yes.

Q. And then you say, "The following excerpts demonstrate this link."

Do you see that?

A. Yes.

Q. And then you identify a series of -- I guess it's six excerpts from the company's November 20th supplement to its information statement, which was essentially its third-quarter report. Right?

A. Correct.

Q. Okay. And you cite those in order to establish a link between exposure to subprime and nontraditional mortgage products and the company's results. Is that right?

A. Yes, in rebuttal to Dr. Bajaj who said there was no link.

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MR. MARKOVITS: Again, I'm going to object. You're either confused or attempting to confuse the witness, because neither in his rebuttal report nor in his testimony has he ever said that there has -- there was misrepresented exposure to nontraditional loans. That is the allegation of the complaint.

Dr. Bajaj assumed that to be true for the purposes of his price impact analysis. Similarly, Dr. Feinstein assumes that it would be true for his analysis of Dr. Bajaj's analysis.

The only question is, is there a link? This says on paragraph 130 that there's a connection between exposure to subprime and nontraditional mortgages and the loss.

The question that will have to be determined at a later date is did Freddie Mac lie about the extent of its exposure or was it telling the truth about the extent of the exposure? But the question of whether there was a link between what

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happened on November 20th and its exposure is set out here. That has nothing to do with whether Dr. Feinstein is opining in any way, shape, or form that Freddie Mac misrepresented its exposure to nontraditional loan products or not.

So, again, you're either confused or attempting to confuse the witness.

MR. FRANK: Mr. Markovits, we disagree. I'm always open to the possibility that I'm confused. I'm not attempting to confuse the witness.

MR. MARKOVITS: All right. Then I'll take it that you're confused.

MR. FRANK: And I will represent to you that I do not believe I am confused.

But what I'd like to do, because we're running out of tape -- the recording device shuts off soon -- is why don't we take a brief break here and we will resume.

But I reserve all rights to resume questioning along these lines, because I don't believe I'm confused.

THE VIDEOGRAPHER: The time now is

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15:23. We're off the record.

(Recess taken from 3:23 to 3:42 p.m.)

THE VIDEOGRAPHER: The time now is 15:42. We're on the record.

BY MR. FRANK:

Q. All right. I will short-circuit this for Mr. Markovits' sake.

You reviewed the 2006 annual report. Is that right?

A. Yes.

Q. Did you review page 69?

A. Yes.

Q. Any recollection of doing that?

A. Yes.

Q. Okay. You are aware that Freddie Mac was buying more nontraditional mortgage products in 2005 and 2006?

A. I'm aware that the allegation is that the disclosure was not full.

Q. Well, before we get to the allegation, were you aware that Freddie Mac disclosed that it was buying more nontraditional mortgage products in 2005 and

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2006?

A. Can you just direct me to that line?

Q. Sure. It's the second sentence on the top of the page. "While features of these products have been on the market for some time, their prevalence in the market and our total mortgage portfolio increased in 2006 and 2005."

A. Yes.

Q. Okay.

A. Yes.

Q. And were you aware that Freddie Mac disclosed that it expected those products to default more often?

MR. MARKOVITS: Again, I'm going to object this is going beyond the scope of his rebuttal report and has no connection to his opinions.

But go ahead.

A. That's what they said in that paragraph.

Q. And do you see below on the page there was a section on subprime loans?

A. Yes.

Q. You previously read this disclosure

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relating to subprime loans?
A. I did.
Q. And were you aware that Freddie Mac disclosed that on December 31, 2006, and 2005, we held approximately 124 billion and 139 billion, respectively, of nonagency mortgage-related securities backed by subprime loans?
A. That's what they wrote.
Q. All right. Now, did you independently reach a conclusion, based on your expertise in economics, that disclosures on November 20, 2007, corrected earlier misrepresentations or omissions concerning the subjects referenced in paragraph 2 of the third amended complaint that we looked at before the break?
A. Almost. The answer is -- would be no to specifically what you said. But I reached a conclusion that they were related, that the disclosures and the material -- and the risk that was materialized were related to the allegations, and that they certainly may have, that they may have been corrective

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disclosures or that -- of the alleged misrepresentations and omissions.
Q. So, just so that the record is clear, you reached a conclusion that the disclosures may have been corrective disclosures. Is that right?
A. That's right. That there certainly was a connection between the factors that the company was attributing the loss and the other negative news to; and the alleged misrepresentations and omissions; and that that was not fully investigated or appropriately investigated by Dr. Bajaj, that connection; and did not rule out the factors the company attributed its loss and dividend cut and capital raise to. He did not appropriately rule out that those were related to the allegations.
Q. Now, if he had appropriately ruled out that those -- strike that.
If Dr. Bajaj had appropriately ruled out that the announced loss on November 20, 2007, were related to the allegations, would that have been sufficient to establish a lack

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of price impact?
A. If he could have proved that none of -- none, not any of the loss that occurred that day, and not any of the vulnerable capital position that was announced that day, and not any of the dividend cut that was announced that day, had anything to do with what plaintiffs are alleging was concealed from the public, that would have established -- at least with respect to those three elements, that would have established that there was no price impact on that day.
So, in other words, if he could have established that nothing -- that none of that -- none of that negative news was caused by anything to do with the allegations, then at least for that day, he would have established no price impact.
Q. And it's not your opinion that the negative news caused price impact -- strike that.
It's not your opinion that the alleged misreps or omissions caused price impact on that day, but rather it's your

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opinion that Dr. Bajaj didn't do enough to establish that they didn't. Is that right?
A. I don't think he did anything, really. He didn't -- he certainly did not -- yeah. He did not do enough. He did very little. But he certainly did not do enough to establish that the loss and the dividend cut and the vulnerable capital position and the actual affirmative disclosures of specific facts that are alleged to have been -- that are -- that were information that is alleged to have been concealed from the public earlier. He did not establish that those things had no -- did not cause the loss, did not cause the factors that caused the loss.
Q. I think you jumped ahead on me, so let me try again. I'll try in a different way.
With respect to price impact, you have reached a conclusion. Is that correct?
A. The conclusion is -- yes, I have reached a conclusion.
Q. Let's take it in pieces.
A. Okay.
Q. You've reached a conclusion.

Correct?
A. Yes.
Q. The conclusion you reached was that Dr. Bajaj did not do enough to establish a lack of price impact. Is that correct?
A. Well, he didn't do it. He didn't establish no price impact.
Q. Okay.
A. His analysis was just not sufficient. And in the course of arriving at that conclusion, there were findings of linkages that he dismissed of direct evidence of price impact that he simply disregarded.
Q. Now, did you reach a conclusion that there was evidence of -- that the misrepresentations and omissions affirmatively caused price impact?
A. Assuming the truth?
Q. I'm not asking you about assumptions. I'm asking about conclusions.
A. Well, I reached a conclusion there was direct evidence of price impact, but I didn't draw the conclusion that there was price impact --

Q. Now --
A. -- because it wasn't within the scope of -- that wasn't my burden. It wasn't in the scope of my engagement.
Q. In connection with your engagement, did any attorney ask you to make any assumptions regarding price impact?
A. Yes.
Q. What were you asked to assume?
A. That the allegations were true, that there had not been full prior -- prior full and appropriate disclosure about those issues that we earlier addressed, that are written in the complaint.
Q. Were you asked to assume that all of the allegations in the third amended complaint were true or only that some of the allegations in the third amended complaint were true?
A. I would have to say some. The allegations, I mean, I believe the complaint mentions market efficiency. I wasn't asked to assume that, of course. I was asked to assume the allegations with respect to misrepresentations and omissions were true.

Q. Okay. So we've just identified one subset of allegations that you weren't asked to assume were true, and that is market efficiency allegations. Is that right?
A. Correct.
Q. Were there any other allegations that you weren't supposed to assume were true?
A. The only assumptions I was asked to assume were true, and that was --
Q. I'm going to stop you just because you misspoke. You said the only assumptions that you were asked to assume. I think you meant --
A. The only allegations that I was asked to assume true --
Q. The record's a mess. The record's a mess, so let me clean it up.
What allegations were you asked to assume were true?
A. That the misrepresentations and omissions in those five categories that are spelled out in the early part of the complaint were, in fact, misrepresentations and omissions, that that actually happened, that

there were misrepresentations and omissions such that the market wasn't appropriately informed about things like exposure to nontraditional risky mortgages and the company's ability to detect fraud and adhere to -- and the company's adherence to underwriting those sorts of things and its vulnerability with respect to capital position.
I was asked to assume that the misrepresentations and omissions such that the market wasn't fully informed about those issues was true, that it was -- that it was true that there were misrepresentations and omissions about those issues.
Q. Were you asked to assume that any other allegations were true?
A. No.
Q. In connection with your work on price impact, did counsel provide to you any facts on which you were asked to rely?
A. What do you mean, provide facts?
Q. Well, did they provide to you any documents that they asked you to rely upon?
A. They provided documents that I

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requested. They provided documents, but these are documents that I had requested.

Q. And I want to be clear, Doctor.

The federal rules, they allow me to inquire about assumptions you were asked to make and about facts that they provided to you, that they asked you to rely upon. So I'm not trying to -- I'm not trying to get into communications between you and counsel, but I'm just trying -- I'm just trying to understand those two categories.

We talked about assumptions. So now let's talk about facts for a second. Did they share with you verbally any facts that -- on which they asked you to rely?

A. They didn't ask me to rely on any facts, no. It was up to me to choose whether to rely on facts or not.

Q. And they provided you documents at your request. Is that right?

A. Yes.

Q. And the documents that you considered, you listed at the end of your report. Is that right?

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A. Yes. Yes.

Q. Okay. Now, you reviewed the Q3 2007 information statement. Is that right?

A. Yes.

Q. And I notice that in your report, you note that the terms "subprime" and "nontraditional" appear 51 and 26 times, respectively, in that report. Do you remember doing an analysis like that?

A. Right. Because Dr. Bajaj said that there was no mention, and I just wanted to show that there was mention of those terms.

Q. I think Dr. Bajaj said there was no mention of those terms in the press release. Is that right?

A. Right. But that's -- that's a half-truth. I mean, if the information releases that day was the formal information release, information statement, the conference call and the press release, to say that there's no mention of it in the press release is not even a half-truth. It's a one-third truth.

Q. Well, it was actually technically true that there were no mention of those terms

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in the press release. Right?

A. A half-truth is technically true, but it's still a half-truth.

Q. I would think a half-truth is only half true.

MR. MARKOVITS: There's a proverb: "A half-truth is a whole lie." I can send you that proverb.

Q. So your counsel has just established that half-true isn't true at all.

MR. GOLDFARB: Only for a securities litigation lawsuit.

A. Well, the point is that, you know --

Q. There's no question pending, Doctor.

A. -- he's trying to make a point that it had nothing -- that the announcements had nothing to do with subprime, and he pointed to only one of the three pieces that came -- of disclosures, venues that came -- that happened that day.

Q. Well, do you know how many times in Freddie Mac's second-quarter 2007 supplement to its information statement the terms "subprime" and "nontraditional" were used?

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A. No.

Q. Did you run that analysis?

A. No.

Q. Why not?

A. That's not what I was responding. I mean, this is a rebuttal report. I was responding to Dr. Bajaj. He didn't say there was no mention on that day, so I didn't need to check it.

Q. It didn't seem reasonable for you -- for Dr. Bajaj to assume that if subprime or nontraditional mortgages were a cause of the stock price drop on November 20th, that they would get mentioned in the November 20th press release?

A. It was reasonable that if he was going to cite to that as evidence, then he would have or should have been more comprehensive and not make it look like there was no mention that day of subprime. There was plenty of mention of subprime that day.

Q. You don't think that the mere fact that the term appeared in the supplement to the information statement's actually indicative of

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a connection between the alleged fraud and the stock price drop that day, do you?

A. I don't. But that's the -- I was responding to the argument that he constructed. He's the one that mentioned or that talked about -- mentioned whether something appeared, whether words appeared.

MR. MARKOVITS: Keep crossing them out, Jason. Keep going.

Q. Now, turn to page 50 of your own report, please.

A. Bottom page 50 or top page 50?

Q. So -- I apologize. Turn to paragraph 50.

Now -- well, strike that. I believe I asked you about that already.

Turn to paragraph 52 just below. Now, this is a section of your report -- if you look just above paragraph 52, you'll see a subheading where you write, "The z-test is a widely used statistical test that has been used in literature and accepted by courts as demonstrative of market efficiency."

Do you see that?

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A. In 52?

Q. Above 52 there's a heading.

A. Yes.

Q. Do you see the heading?

A. Yes. Yes.

Q. Okay. And now, when you wrote it's been used in literature, are you referring to the articles that you identify below in this section?

A. No. No, I was referring to -- well, the z-test is used in a lot of -- in the literature in a lot of places. But as -- for testing market efficiency, it's in the FDT test -- article.

Q. So in this section that's entitled "The z-test is a widely used statistical test that has been used in literature and accepted by courts as demonstrative of market efficiency," you refer to an amicus brief in paragraph 53, several cases in paragraph 54 --

A. Right.

Q. -- and a Hartzmark article in paragraph 55?

A. Well, the Hartzmark article talks

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about the collective test, which is very similar to the z-test, but they use a different -- they use the bootstrap instead of the actual z-test. But it's still a collective test that compares high-information days with low-information days to see if the price dynamics are the same.

Q. Well, let's talk about the Hartzmark article for a second.

(Exhibit 272 is marked for identification.)

BY MR. FRANK:

Q. I'm showing you a document that's been marked as Exhibit 272. Is Exhibit 272 the Hartzmark article that you reference in your rebuttal report?

A. I think -- no. No. Oh, yeah. Yes, it is. On the cover it just says Seyhun, but on the inside it does say Hartzmark and Seyhun.

So it is, yeah.

Q. This is the same article?

A. This doesn't seem to be the published version. Well, maybe I'm wrong.

No, this is a working paper at,

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what, University of Michigan, and the version that's cited is the published version. I would imagine they're similar.

Q. They both bear the same title. Correct?

A. Yes.

Q. The title of the Exhibit 272 is, "The Curious Incident of the Dog That Didn't Bark and Establishing Effect-and-Cause in Class Action Securities Litigation."

Is that right?

A. Yes.

Q. In your report, you cite a Virginia Law & Business Review article entitled "The Curious Incident of the Dog That Didn't Bark in Establishing Cause-and-Effect in Class Action Securities Litigation."

Is that right?

A. Right.

Q. And they're both 2011 documents. Right?

A. Yes.

Q. Okay. Now, is this the Hartzmark article that you referred to in the first day

of your deposition testimony?
A. It's the unpublished version of it.
Q. Now, this Hartzmark article actually doesn't discuss a z-test. Is that right?
A. Well, it depends whether you mean by the z-test the actual statistical test that's used to compare the news and the non-news samples. That would be accurate. But if you mean by the z-test a collective test -- let me try to say this correctly.
The z-test is a statistical test that's used for testing market efficiency and a wide variety of other applications. So that's statistical tests they don't use, but people have been talking about a z-test as the collective test of comparing news and non-news days, and in that sense it is an article about that.
They don't use the same statistical test. They use a bootstrap test, which I also ran.
Q. Okay. So this article discusses the bootstrap test. Is that correct?
A. This article discusses a lot of

things. It discusses how to -- you know, how -- why comparing news days to non-news days establishes market efficiency when there's different price dynamics. And the logistics of how they establish that there's a significant difference is with a bootstrap statistical process rather than a z -- statistical z-test.
Q. They discuss a collective test. The collective test they discuss is not the z-test?
A. I wouldn't even say it that way. Fair enough. I mean, it's -- all it is when you get -- everything's the same about the z-test and the test they use until you get to how to statistically establish that the two samples are different. Instead of using the statistical z-test, they use a bootstrap test. I also used a bootstrap test, and it's in the rebuttal report.
Q. I understand. But I'm just trying to cut to the chase.
This is an article that discusses the bootstrap test, not the z-test. Is that right?
A. It discusses a collective test for

market efficiency and employs a bootstrap test for distinguishing between the two samples.
Q. Okay. Now, in terms of the amicus brief that you cite in paragraph 53, that's an amicus brief that you coauthored. Is that right?
A. Right.
Q. Now, are you aware of any other literature in which the z-test is used other than -- well, strike that.
Are you aware of any statistical -- strike that.
Are you aware of any literature in which the z-test is used in connection with establishing market efficiency that isn't set forth in this section of your report, other than the FDT article?
A. Well, the FDT article, the Hartzmark/Seyhun, the amicus brief court opinions -- no. Besides those, no.
Q. Okay. Well, let's just stick with academic literature for a moment.
So in terms of academic literature, are you aware of any article where the z-test

is discussed in connection with assessing market efficiency other than the FDT article?
A. The -- what we're talking about here is an application of a widely used statistical test. You say other than. I mean, there are two articles -- well, there's the FDT article that specifically applies this well-known, commonly used statistical test to the realm of market efficiency. And aside from that one, I do not know of other published articles about it -- about it in the context of market efficiency.
Q. Okay. Now, let me turn your attention to your defense in your rebuttal report of your event selection methodology. This, I believe, starts on paragraph 83, that is page 32 of 70 of your rebuttal report.
A. Okay.
Q. Now, if you look at paragraph 86, you write -- you're responding to Dr. Bajaj's argument that your selection process was unprecedented and speculative. And you write -- well, more specifically at the very end of the paragraph 85, you write, "Dr. Bajaj

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asserts that my 'method of selecting news days renders my test highly speculative' and that there is 'no scientific authority to support the notion that my selection criteria is reliable.'"

And you respond in paragraph 8 and following, you write in all caps, "Dr. Bajaj is wrong. He is either unaware of or disregards the numerous academic papers in the finance literature that identify events based on news appearing in the Wall Street Journal and the New York Times. This event selection methodology is well supported and widely used. For example," and you cite a number of what appear to be articles.

Do you see that?

A. Yes.

Q. Now, in the first one, it says the usual -- "The usual published sources, for example, the Wall Street Journal or the New York Times, are used to select the announcement dates."

Do you see that?

A. Yes.

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Q. Now, in that article, was the Wall Street Journal and the New York Times used to select dates randomly or were there a particular kind of information that the Wall Street Journal or the New York Times was used to identify?

A. Well, the authors relied on the Wall Street Journal and the New York Times to identify announcement dates.

Q. So isn't that case different from this case insofar as there was a particular kind of news that the authors were looking for?

A. Well, the connection is that they relied on the Wall Street Journal and the New York Times for identifying events.

Q. And -- well --

A. That's common practice.

Q. They were looking for a particular kind of event in that circumstance. Right?

A. So was I. I was looking for events that had important news with respect to Freddie Mac.

Q. Well, you had never seen your approach used, done in -- strike that.

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This is the first time you ever used that approach. Right?

A. Well, there were reasons for it, which I explained in the last deposition.

Q. My question was a little bit different.

A. I never used exactly that methodology. But the methodology -- you know, the facts and circumstances of the case have to be considered in applying the methodology, applying generally accepted, widely used tools. In this case, those tools had to be applied this way.

Q. Had you ever seen a methodology used before where the newspaper dates were not the dates used to identify the events?

A. Yes. That's -- well, I did that way. I mean, because if we're looking for days when there was -- I used the New York Times and the Wall Street Journal as screens to identify when important news came out. But the day of the publication is not the day that should be tested. It should be the day of the event that's reported in the article.

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So they're the screens that basically attest that something important happened with respect to Freddie Mac. It would be wrong to test the publication date rather than the event date.

Q. Weren't you looking for dates that had a higher information flow?

A. Yeah. But the higher information flow, I mean, these are papers that are usually published the next morning after -- these are papers that are published in the morning. If the event happened on a Wednesday, they will be reported Thursday morning.

The information flow will be from a variety of sources -- television, the internet. It will affect the market on Wednesday.

The Thursday publication in the Wall Street Journal and the New York Times, its purpose is to say that this is an important day. That the effect of these publications each identified that event as being an important event is what the screen -- is how I used those publications for the screen.

Q. Are you aware of any literature that

supports the notion that the news day that should be used is not the date of the publication of a newspaper?

A. I think this first one, we could -- do you have it here? We could look at it if they're using it to identify announcement dates. Well, if you're using the Wall Street Journal, for example, to identify earnings announcement dates, the date of the event is going to be the day before the publication in the Wall Street Journal. So that's typical.

Q. Are you aware of whether -- of the selection process used by the New York Times or the Wall Street Journal to identify what events got coverage?

A. Did I talk to the editors to see how they screen? I think it's -- it's reasonable that they pick days, they pick events that they consider newsworthy. I think that's common knowledge. Wall Street Journal and the New York Times pick events to cover that they consider newsworthy.

Q. Are large stock price movements sometimes newsworthy?

A. Sometimes. But these -- the content of these articles was about things that happened, not about the -- not only about a particular reaction.

Q. Is it possible that the newspapers covered events in part because there were large stock price reactions to these events?

A. I don't think so. If you look at the events, the events were important things that happened that may have elicited in some cases large stock price movements.

But they identified events -- I mean, the fact -- using the Wall Street Journal and the New York Times together is so that we can identify events, not just stock price movements. If you used like a paper that was more focused on investment advice, for example, that might be the case. But if it's the Wall Street Journal and the New York Times, they're covering important events in the life of the company. That's what they do.

Q. You don't think that the Wall Street Journal and the New York Times pay attention to investment-related information?

A. What I'm saying is that they're not specifically investment advice publications, which is where -- that and certain analyst reports react to price movements rather than the actual developments in the life of the company.

Q. Isn't it possible that the Wall Street Journal or the New York Times reporters who covered events took into account stock price movements in deciding whether or not to cover them?

MR. MARKOVITS: Objection as to possible.

A. Well, I mean, I don't recall seeing an article that says there was a large movement and we have no idea what was going on. Certainly in the life of this company, I think sometimes that occurs. But that's not what was -- happened in these events.

Q. Now, if you turn to paragraph 88 of your report, you see that Ferrillo, Dunbar, and Tabak identify various ways to select news dates for a z-test.

Do you see that?

A. Including major newspapers.

Q. And they say -- do you see what I just referred you to?

A. Yes.

Q. Okay. Now, they say there are various ways to select news dates, and one of the issues is the choice of news sources to be searched. And they say, for example, major newspapers and press wires versus all available news sources.

Do you see that?

A. Yes.

Q. And you chose two major newspapers and did not include press wires. Is that right?

A. Yes.

Q. Why was that?

A. Well, I was looking for a screen that would identify the big important developments in the life of this company.

Q. And one screen that --

A. And, frankly, the issue that you raised before would be relevant if it wasn't -- if you broadened the search out to include

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analyst reports or investor advice publications, where they would just say there's something going on at Freddie Mac. We don't really know what it is, but the price is falling or the price is rising.
I mean, picking the New York Times and the Wall Street Journal, respected publications, widely read, with respected editors, is a way of screening what's big news.
Q. And one of the things they suggested was whether to limit the search to those stories where the company name and/or ticker is mentioned in the headline, mentioned in the headline and lead paragraph, or mentioned anywhere in the story.
Do you see that?
A. Right. Yes. Each of the articles I picked were about Freddie Mac.
Q. And so did you use one of those screens; that is, mentioned in the headline, the headline and lead paragraph, or anywhere in the story?
A. This is something we covered in the last deposition, so I'm going to have to look

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at my last report to describe to you the selection procedure. Do we have it?
Wrong report.
Do you have -- do I have it? The --
Q. I don't think your old report's been reintroduced here.
A. Well, that's what your question's about. I would need to see it.
Q. You don't remember offhand what the selection procedure was?
A. It's in the report.
Q. I understand.
A. The report speaks for itself.
Q. I understand.
A. What I do remember is the articles are about Freddie Mac. Usually when I use Factiva, there's a search parameter that -- for the -- the company they consider the subject of the article.
Q. Now, are you aware of any paper or brief in a case or a report where your same methodology was used? Event selection methodology.
A. I can't say one way or the other.

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As I sit here right now, at the end of the day I can't name it for you, but I can't rule it out, either.
Q. Now, if you look at paragraph 86, at the top of page 30, you'll see that you cite an article from the Journal of Banking & Finance entitled "Do Managers Time the Market? Evidence from Open-Market Share Repurchases."
Do you see that?
A. Yes. Yes.
Q. And in that article, they looked at open-market repurchase programs as reported by the Wall Street Journal.
Do you see that?
A. They rely on the Wall Street Journal to identify the event dates.
Q. But in that case, there was an ex ante identification of the type of event date they wanted to address. Correct?
A. I don't recall specifically but sounds reasonable.
Q. And in the next article from the Journal of Law and Economics, it says, "Searching the Wall Street Journal and the New

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York Times and the Washington Post, we identified nine press dates from 1988 to 1990 on which articles appeared indicating significant changes in the likelihood that the commission would adopt increased penalties for corporate crimes including fraud."
Do you see that?
A. Yes.
Q. And, again, that was an effort ex ante to identify the type of information they were looking for. Correct?
A. Right.
Q. Okay. And you hadn't identified ex ante the type of information you were looking for here, had you?
A. No, I had.
Q. Well, you weren't looking for earnings dates, were you?
A. Not -- I wouldn't rule them out. It was -- if the New York Times and the Wall Street Journal considered a development to be an important development in the life of Freddie Mac and it was such that it was reported in both, it was included.

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Q. But you didn't care whether it was a stock buyback program, whether it was earnings dates, whether it was a discussion about particular kind of information. You were just interested in the fact that those two entities wrote articles on or near the same date about the same subject?

A. Oh, about the same subject. That's what's the important thing.

Q. Did I get that right?

A. No, I mean, I was interested in events that the Wall Street Journal and the New York Times both considered to be important news. If they both considered it to be important news, the underlying principle is that it was an important day in the life of Freddie Mac such that there would be high news flow those days.

Q. And you ex ante didn't make a determination of what kind of news you wanted to identify. Correct?

A. I didn't do that -- well, if I had, then Bajaj and perhaps you would be criticizing that it was a subjective screen.

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Here, I left it to the Wall Street Journal and New York Times to identify what they consider big news. That's what they do. That's what those -- that's what people rely on the Wall Street Journal and the New York Times for. You know, of course, the writing and the reporting is good, but their selection of what's big news is part of the role they serve in society and in the financial markets.

Q. Is it your view that selecting earnings dates as a -- the kind of date you want to review ex ante is a subjective determination?

A. No. But in this particular case, as I described in my last deposition, that wouldn't have been appropriate to use earnings dates.

Q. Because you already knew what the results were?

A. Well, not just that I knew what the results were. It's because there was already a debate -- it was already reported why four of the six were not -- were not and should not elicit statistically significant movements.

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I actually -- I looked at that argument and Dr. Holman's report and I verified it. He said it was mixed news on those four. I saw that Dr. Bajaj disagreed.

If I had just repeated Dr. Holman's methodology, the way I would have done it is the way I did it in Prudential. I would have said that let's look at the dates based on the news that should, and the only one of the dates that indisputably should elicit a statistically significant movement, according to Dr. Bajaj and Dr. Holman together, was the last one and which was included.

So, I mean, the point is what I made -- the point I made last time was that that ground was already well tread. And, you know, throwing my hat in the ring and agreeing with Bajaj or agreeing with Holman on it didn't seem like the most informative approach for purposes of establishing market efficiency or finding evidence that it wasn't efficient.

Q. What do you mean "the most informative approach"? What do you mean by that?

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A. The arguments over the earnings announcement dates were already out there on the table. Holman said they were important dates to look at. Holman said that the first four were mixed news and so that they wouldn't reasonably elicit statistically significant reactions. Holman said the last two were significant. Bajaj said the last one was but the second-to-last one wasn't.

I just didn't see anything that the court could gain from additional analysis there.

Q. Let's turn to the -- strike that.

Well, did you understand that when you became the new expert substituting for Dr. Holman, that those old -- older arguments between Dr. Holman and Dr. Bajaj would no longer be before the court?

MR. MARKOVITS: Objection.

A. Actually, I didn't know one way or the other how that would be treated. But it didn't make sense to me to start anew with a different approach.

Q. Let's turn to the damages section of

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your report.

A. If I could -- well, I just want to elaborate just a bit.

Q. I'll wait for your counsel to ask you a question at the end of --

A. All right. I don't -- we'll leave it at that. We'll leave it at that.

No. I just want to point out that had I used -- had I appropriately included an analysis of the earnings announcements, it's pretty clear what Dr. Bajaj's, or whoever your expert would have been, how they would have criticized it. They would have said it was invalid because I already knew the results.

MR. VOLPE: Objection. Nonresponsive. No question pending.

Q. Now, on page 48 of your report, that is page 52 of 70, 48 if you look at the bottom of the page, do you see there's a section that is Roman numeral IV, critique of the Gompers report?

A. Yes.

Q. Okay. And that section begins with paragraph 134. Do you see that?

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A. It does.

Q. And it goes all the way to paragraph 155. Do you see that?

A. Yes.

Q. Okay. And so paragraphs 134 through 155 contain your entire rebuttal to Dr. Gompers. Is that correct?

A. Yes.

Q. Okay.

A. As I said earlier, it really can be condensed to a couple of sentences, really.

Q. Now, did you leave anything important out?

A. I don't believe I did.

Q. Now, Dr. Gompers had a number of criticisms of your opinion on damages. Correct?

A. He did.

Q. And you addressed them all in these paragraphs. Is that right?

A. Right. The overriding addressing of his opinion is that his conclusion says that it would be a complex matter to calculate damages. I don't dispute that.

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He says if not impossible -- well, he doesn't say it's impossible. He doesn't -- he refuses to opine that it's impossible, both in his report and in his deposition.

So he did not say it's impossible, and I say it's possible. And I have -- I can -- that's what this -- that's what I do in this section. It is possible.

Q. Mr. Volpe is going to move to strike everything after the word "right," and I'm going to join him at a later date.

MR. VOLPE: Move to strike. Nonresponsive.

Q. Now, you don't have any opinions regarding his critique that you didn't put in here, do you?

MR. MARKOVITS: Are you saying that he address every sentence in the multiple pages of the 140-some pages in Bajaj's and Gompers' report? Obviously, he didn't.

MR. FRANK: I'll clarify in case there's any confusion.

Q. You don't have any opinions regarding Dr. Gompers' critique of you that you

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didn't put in your report, do you?

A. Yes, I do.

Q. What's that?

A. That it wasn't necessary for him to recap or recount the history of the 2007-2008 financial crisis, or most of what's in there just wasn't necessary. He puts that in there in order to assert ultimately that it would be difficult to calculate damages, but he refuses to say it would be impossible to calculate damages.

And he also -- so I didn't put in here that virtually everything in his report was not necessary, because his conclusion ultimately is something I can agree with, which is that it would be -- it's complex. Complex, but not impossible.

Q. Doesn't he opine that you did not articulate a damages model that could calculate damages in this case?

A. Oh, I refute that here. I did -- I write my damages model. So there is a damages model, and that's refuted right here.

Q. You don't agree with that opinion of

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his?

A. Absolutely. I totally disagree. And, frankly, I think 11 courts have also disagreed with him on the subject.

Q. But you understand -- you understand that's his opinion?

A. That I did not articulate a damage model?

Q. That can calculate damages in this case consistent with the theory of liability.

A. And I totally disagree with that.

Q. But you understand that's his opinion. Right?

A. Well, it's compound. Your question is compound because his statement is compound.

So about half of it is, did I articulate a model? Yes, I do. I think he thinks I didn't, but yes, I did articulate a model. Can it calculate damages? I say yes. He says it would be hard. It would be complex, that using that model would be complex.

I don't disagree with that. I mean, it's not impossible, but it would be -- it's certainly possible. People do that every day,

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value stocks under a wide variety of assumptions and scenarios and information flow.

Q. Let me turn your attention to paragraph 136.

A. Okay.

Q. There you write, "Dr. Gompers has four main criticisms of the damages methodology described in the Feinstein report."

Do you see that?

A. I do.

Q. Now, let's look at the first one. You write -- this is the first criticism of Dr. Gompers -- "that my proposed methodology 'fails to articulate any specific methodology for calculating damages.'"

Do you see that?

A. Yes.

Q. You understood that was one of his criticisms of you. Right?

A. Yes.

Q. You don't agree with that, do you?

A. Correct.

Q. Okay. If he's right about that, what does that mean?

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A. I don't know. That's for the court to determine.

Q. Okay. But you disagree with --

A. I think it's wrong. I think it's clearly wrong.

Q. Okay. Now, his second criticism of you is "that my proposed damages model is inconsistent with plaintiffs' materialization of risk theory of liability."

Do you see that?

A. Yes.

Q. You disagree with him. Right?

A. Yes.

Q. You understood that was his opinion, though?

A. Yes.

Q. Okay. That's one of his criticisms of you. Right?

A. One moment.

Okay. Yes.

Q. He has a third criticism of you. Correct?

A. Yes.

Q. That is that you "have not

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articulated a methodology that can account for changes in market conditions during the proposed class period."

Do you see that?

A. Yes.

Q. Okay. That was one of his criticisms of you. Right?

A. Yes.

Q. You don't agree with him, do you?

A. Correct.

Q. Okay. And, finally, he has a fourth criticism, according to you, which is that "my proposed damages approach fails to distinguish among multiple types of alleged misrepresentations."

Do you see that?

A. I do.

Q. Do you agree with him?

A. No.

Q. Okay. Now --

A. I mean, I -- if what he means is that the approach cannot, the damage model cannot, then I certainly disagree with that.

Q. Well, let's talk about what he

actually wrote.
A. It's false. What he wrote is false.
Q. You disagree with him?
A. Correct.
Q. You think he's wrong?
A. Yes.
Q. You don't agree with him?
A. That's right.
Q. Okay. Now, you in paragraph 145 mention several "commonly used valuation tools."
A. Right.
Q. It appears about five lines down. You write, "Among the commonly used valuation tools that are available to investors and analysts in real time."
Do you see that?
A. Yes.
Q. Okay. And then you list several valuation tools. Is that right?
A. I do.
Q. One of them is valuation multiple models. Do you see that?
A. Yes.

Q. And apparently there are a number of different ones. There are those based on earnings, EBIDTA, revenue, book value, and cash flow. Is that right?
A. Yes.
Q. There are multiple different kinds of multiple models?
A. Right.
Q. Okay. And then there's a second category, discounted cash flow models. Right?
A. Yes.
Q. And then there's something called return attribution analysis. Right?
A. Yes.
Q. Of those three different types of models, which do you propose to use here?
A. I have all of them at my disposal. The marketplace did; so would I.
Q. But which one are you going to use in this case?
A. That's -- that's -- the specific implementation of the model, the model, is to calculate an inflation ribbon, which is the difference between the actual price that

prevailed in the marketplace and the price that would have prevailed had there been full disclosure. It's to use the inflation ribbon and look at changes in the inflation ribbon. That's the model.
And so it's really the construction of the but-for price that he's questioning, can that be done. I would have all the tools at my disposal that market participants have in real time, and that's what this paragraph says.
Q. Have you ever heard the expression "out-of-pocket damages"?
A. Yes.
Q. In a securities case, what's the definition of "out-of-pocket damages," if you know?
A. Well, what I've heard is that this model that I've articulated is the definition of out-of-pocket damages -- out-of-pocket damages, the loss that was -- the loss that occurred on account of the misrepresentations and omissions, being the change in the inflation from the -- it's exactly what I described as the model. I've heard the model

that I described as being a model of out-of-pocket damages.
Q. Is it fair to say that you just haven't decided yet which one of these valuation tools you would use to calculate damages in this case?
A. Well, it's premature. I mean, the discovery's not complete. The full record's not complete. The evidence and proof of what I previously was led -- was required -- what I was previously asked to assume has not yet been fully developed and presented.
I mean, the connection between misrepresentations and omissions, market expectations for, for example, the November 20th earnings announcement and the actual loss that was reported, that record has to be developed before I know which of these tools is best to establish the but-for price.
Q. Is it fair to say that you haven't selected from among these valuation tools to calculate damages because, in your view, it's premature?
A. Yes --

Q. Now --
A. -- it's premature. The model is established. The model of how one was damaged, if the allegations are true, is there. It's articulated. The -- even the implementation to the extent that one would require evaluation of the stock under alternative scenarios, under full disclosure scenarios, is there.
What valuation tools, you know, it's when you get that granular. What valuation tools specifically would be applied for that, the full record needs -- the full record that informs me, or whoever the forensic analyst is, of specifically what are the actionable and established misrepresentations and omissions that impacted the price, that's what needs to be done. That's what needs to be provided or further developed in order to pick the tools.
Q. Now, if you -- assume that the record is developed. Assume you're the expert retained to calculate damages on behalf of the plaintiffs.
Will you be choosing from among only these three tools that you identified or will

there be more?
A. Well, these are examples of the tools that are available to the marketplace and would also be available to me. There are more.
Q. So we don't know which one of these models you would use?
A. These aren't models. These are tools to implement the well-articulated model.
Q. Is it fair to say that valuation multiple models aren't models?
A. This is not a damage model. It's a valuation model. A valuation model is a tool within the damage model. So which tools to use to value the stock under alternative hypotheses and alternative scenarios needs to wait.
Q. And the damages model you articulate is the same as the definition of out-of-pocket damages. Is that right?
A. You know, I really -- to the best of my recollection, but I would rather not say. I'd rather call the model the -- rather than name the model, I'd rather just stick with my description of the model.
Q. Well, your description of the model,

is that a description that applies to every securities litigation case?
A. 10b-5 class action cases. That's the model that courts and Congress have agreed is an appropriate model.
Q. And so, in your view, the Comcast requirement -- well, strike that.
Are you familiar with the fact that there's a Comcast requirement?
A. I'm not a lawyer. I'm familiar with the Comcast decision and what it says.
Q. And you're familiar that it requires at the class certification stage for plaintiffs to identify a model for damages that is consistent with the plaintiffs' theory of liability. Is that correct?
MR. MARKOVITS: Objection. Calls for a legal conclusion.
A. I understand that that's a requirement of plaintiffs.
Q. And so is it your understanding is that -- is it your understanding that in a securities case, that requirement is easily satisfied by articulating what you have done in

your report here in every securities case?
A. I know there are some securities cases where experts have proposed alternative damage models, and sometimes they succeed and sometimes they fail to satisfy the court that they've articulated a model that's consistent with the theory of liability.
But I don't know of a case where the standard model used by courts and referenced by Congress has failed to satisfy the court.
But I'm not a lawyer. I mean, that's my -- my understanding is that the -- is that what's meant by the Comcast requirement is satisfied by articulating this sort of methodology, this sort of model to this level of specificity.
Q. Now, in paragraph 145, you mention literature regarding valuation effects of factors such as reputation and quality of accounting.
Do you see that?
A. Yes, I do.
Q. And how would that literature impact any work you might ultimately do on damages?

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A. Oh. Well, there's a literature that says specifically, for example, what's the relationship between economically quantifiable inflation and reputation effects, for example.

So there's a literature that talks about how reputation is used or viewed by the marketplace in a way that impacts the stock price. I would likely use that in that case.

There's a literature on what investors typically do when they don't have access to information that they would otherwise want. Acrolaw work. Lemons law analysis and models are an example of that. So -- and there are others. There's literature about the types of things -- about how various effects that might be at play in the ultimate but-for scenario that I'm asked to analyze affect the stock price.

Q. Now, is that literature literature that you would use to modify how you use the valuation tools that you identified just before it?

A. Most likely. It could be -- it could augment them. But I don't know of a case

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where the marketplace for a large publicly traded security like Freddie Mac stock has said we don't know how to value this stock and we're not going to price it. The marketplace virtually continuously prices every publicly traded security, and they use these tools. And so would I.

Q. Now, let me turn your attention back to the Hartzmark -- actually, do we now have the -- let's take a brief break here.

THE VIDEOGRAPHER: The time now is 16:44, and we're off the record.

(Recess taken from 4:44 to 4:58 p.m.)

THE VIDEOGRAPHER: The time now is 16:58. We're on the record.

BY MR. FRANK:

Q. Do you recall at the beginning of the deposition, Dr. Feinstein, you referred to a footnote in Dr. Bajaj's report that you thought contained an opinion that he shouldn't have put in a footnote?

A. Yes.

Q. What was that footnote, if you

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recall?

A. We actually covered it.

Q. I'm just trying to remember.

A. It was about serial correlation. He said it was that before one tests semi-strong efficiency, one should check for serial correlation to test weak-form efficiency.

Q. And do you have this exhibit before you that is Dr. Bajaj's report?

I believe it was previously marked as Exhibit 187.

A. Yes.

Q. And do you recall where this footnote was in his report, by any chance?

A. No. Look, he's got 200 footnotes. If you look at page 80, page 80 has the 212th footnote. So there's quite a lot of footnotes. I don't remember which number it was.

Q. Did you testify that you didn't -- because it was in a footnote, that you -- was it that you did not include in your rebuttal report reactions you had to the footnote? Is that right or am I misremembering?

A. No, that's right. But we covered it

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pretty well today.

Q. We covered it? So there's nothing -- there's no opinions you have vis-Ã -vis Dr. Bajaj's report that haven't been expressed either in your own report or expressed today by you at your deposition?

A. No. I -- during the break I was thinking through what we've covered today, and there's one other thing I'd want to say about it.

Q. What else would you like to say?

A. Well, I mean, when he took -- when he slices and dices the class period into three periods and then runs a binomial test, he's really condemning the test to fail from the outset.

I mean, you don't even have to run the test. If there's three periods and he's only accepting that there were three significant events, then there's really either only going to be one significant event per period or some periods will have no significant events.

So it's really a poorly -- if he

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does it that way, if he really believed that those were appropriate slicing and dicings of the class period, then it would be an inappropriate test to run, because you would -- it just has no power. It would have no power to distinguish efficient from inefficient markets, the way he ran it.

So it's -- I mean, it's -- again, it's not -- he's not detecting a defect in the market. What he's detecting is a defect he built into the test.

Q. Well, who chose the dates for the test?

A. He did. I mean, he chose the points to where to slice -- if that's what you meant. He chose these break points.

Q. No, that's not what I asked.

Who chose the dates to test?

A. I chose the dates to test.

Q. Was there any limit --

A. But it makes sense to run it if it's being run over the entire class period. It doesn't make sense to run it if you're going to run it over pieces of the class period.

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Q. Was there any limit to the number of dates that you could choose?

A. If I -- if the screen had not identified an appropriate number of tests to run over either the whole period or some portion of the period that I thought was necessary to run it over, I would have understood that the test had no power to distinguish efficient from inefficiency from the beginning and therefore I wouldn't have run it.

But he went ahead and that's what he did. So he's making it look like he found a defect in the market when, in fact, it's a defect he could have identified and explained in the test the way he ran it, the way he chose to run it.

Q. Did you engage in more than one effort to identify what you just referred to as a screen?

A. He could.

Q. No. Did you engage in more than one effort to identify --

A. No.

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Q. -- the selection process?

A. No. Because the screen did identify an appropriate number of events to run over a test of 16 months.

Q. And so on your first shot, your screen identified nine dates, and you thought that that was an appropriate number of dates?

A. Right. If it identified just one, then the screen would have failed.

Q. And at the time that you identified nine dates, you knew already that there was a structural break in the class period, at least one. Correct?

A. Yeah. But don't -- don't conclude from that that the way I ran the test over the whole period is incorrect. It's still incorrect.

The structural break is a break in the statistics, and that was taken into account for determining which events were significant. It's not a structural break in the market efficiency.

MR. MARKOVITS: Professor, I believe you said, "It's still incorrect." Did you

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mean it's still correct?

THE WITNESS: I'm not sure.

Q. Well, I'll ask the question again. You can give it another go.

A. All right. Yeah. Let me just put on the record that I might have misspoken on the last answer and I want to correct it.

Q. At the time that you identified nine dates, you already knew that there was a structural break in the class period, at least one. Correct?

A. One. There was one.

Q. Now, let me turn your attention to Footnote 40 of Dr. Bajaj's report that appears on page 20 of 370.

A. Footnote 40 on page 19?

Q. Yes. 19 of 81.

A. That's the footnote. That's it.

Q. Footnote 40 is the footnote that you read that you reacted to?

A. Right.

Q. I got lucky.

A. You did.

Q. And that's the footnote that you

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were testifying about this morning. Correct?

A. Yes.

Q. Okay. And that's the footnote that you believe you've already shared on the record why you believe that footnote is not correct. Is that fair to say?

A. Yes.

Q. Okay. I will not rehash old ground.

Now, at this time I'm going to pass the witness, but I will say that if no one else has questions then it's my intention to suspend today, because I believe that there is data or documents that should have been produced that was not produced.

And so I'm going to ask that any calculations that were considered by you in connection with your rebuttal report, including any Chow test you ran or your team ran and including any other tests you ran to assess -- to assess calculations be provided to us. Because under the rules, I believe those were -- that was data that you considered in connection with forming your opinion, opinions, and I believe we're entitled to it.

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I will tell you that it is my hope that the production of that material does not lead to yet another day of depositions. But I do believe we are entitled to that material, and I would like to see that material before we make decisions about actually concluding the deposition.

So at this time, having said that, I will pass the witness.

MR. MARKOVITS: Okay. We disagree, but I'm going to have a few questions -- we disagree as to the issues you just raised. But we will address it and we'll move on from there.

But, meanwhile, I have a few questions to clarify the record.

EXAMINATION

BY MR. MARKOVITS:

Q. Dr. Feinstein, you testified earlier in the deposition about the Prudential case, which is referenced in your rebuttal report. Correct?

A. Yes.

Q. Why did you cite the Prudential

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case?

A. Because it is a case, and a prior case that I did, in which there were two empirical tests for Cammer 5. One was an events study, and it was a traditional events study that examined one single date, exactly the same as in the Freddie Mac case. And the collective test similarly was very similar to the collective test run in the Freddie Mac case.

So I included that in my rebuttal report because there was a question as to whether or not I've ever used exactly this methodology before, and that's an example of where I did do a single-event event study for the Cammer 5 capture.

Q. Is the description in your rebuttal report of the Prudential case misleading in any respect?

A. No.

Q. I want to direct your attention to the third amended complaint previously marked as Exhibit 30. In that, there are a number of allegations regarding misrepresentations and

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omissions alleged by the plaintiffs. Correct?

A. Yes.

Q. Are you opining or have you ever opined as to the truth of those misrepresentations or omissions?

Let me strike that and be a little more clear.

Are you providing any opinion as to whether or not plaintiffs are correct in their allegations of misrepresentations and omissions?

A. No.

Q. Why not?

A. It wasn't necessary for the work that I did. What was the necessary with respect to the price impact was that I assume that, in fact, there are those misrepresentations and omissions. So it wasn't necessary, and with respect to loss causation, it's premature.

Q. What's the relevance of November 20, 2007, with regard to your opinions?

A. Well, that's a date on which plaintiffs allege that there were corrective

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disclosures, specific information provided that corrected incorrect information that was provided previously, and on which there was a realization of the risk that was allegedly underestimated on account of misrepresentations and omissions, either underestimated or concealed.

Q. I want to just touch briefly on Dr. Gompers' critiques, part of which dealt with issues such as confounding events or change in market conditions, multiple misrepresentations.

Can all those add to the complexity of a damage analysis?

MR. FRANK: Objection.

A. They can, but they're not unusual. Every case has those features. Every analysis of security over a span of time will reasonably have features like that.

So it's not unusual, it's not unique, that kind of challenge and complexity that needs to be addressed in calculating damages.

MR. MARKOVITS: I have nothing further.

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EXAMINATION

BY MR. FRANK:

Q. Dr. Feinstein, you have before you Exhibit 270. That's your report in Prudential.

A. Yes.

Q. Is it your testimony that in Prudential, you only considered one date in connection with potential disclosures?

A. No. I considered several, just as I considered several in the Freddie Mac case, but arrived at one that was appropriate to test, just like -- just as I did in Freddie Mac.

Q. What are the several dates you considered in the Freddie Mac case?

A. Well, as we talked about today, I considered using the earnings announcements, but rejected doing that for a variety of reasons.

Q. Now, I see that in the Prudential case, you included discussion of the various dates that you considered testing but didn't.

Did you include a discussion in your Freddie Mac report of the dates that you considered including but did not?

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A. I don't think it was in the report, but it was certainly in the deposition.

Q. Now, other than the Prudential case, have you -- strike that.

Now, in the Prudential case, you actually did test earnings announcements dates. Is that correct?

A. Only as a -- in the collective test. So there was no deep-dive information analysis on each of them to see if they should be included in an individual event study -- individual-event events study. But they were included in the collective test because it was reasonable to do so.

Q. What's a deep-dive information analysis?

A. An assessment as to whether the nature of the news that emerged that day would reasonably elicit a statistically significant stock price reaction. That's not done for the events in a collective test. It is done for events analyzed in an individual-event event study.

Q. Now, you used -- ultimately, did you

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test some of the earnings announcements dates in this case?

A. Some, yes.

Q. Okay.

A. Because they were included in the collective test. They were identified as important dates by the New York Times and the Wall Street Journal.

Q. They were identified using your New York Times/Wall Street Journal event selection criteria?

A. Yes.

Q. They weren't tested because you tested all earnings announcements dates. Is that right?

A. Correct.

Q. If you had tested all earnings announcement dates, you would have ultimately tested a different set of dates than what you actually tested. Is that correct?

A. Do you mean in an individual events study -- individual-event event study or a collective events study to test?

Q. Well, either one. Let's be

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concrete.
You did a z-test in this case.
Right?
A. Yes.
Q. And you used a Wall Street Journal/New York Times event selection methodology that you devised for this case. Right?
A. Right.
Q. And --
A. Well, yes.
Q. Yeah. And you --
A. Applied. I would use the word "applied," not "devised." That I applied in this case.
As I wrote in my rebuttal report, using the Wall Street Journal and the New York Times is in the literature, that other people have done this.
Q. Other people have used this precise event selection methodology that you used?
A. They've relied on the New York Times and Wall Street Journal to identify events.
Q. I see. It's at the end of the day.

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You've got to answer my question or the day gets really long.
Other people have used this precise event selection methodology selection method that you used?
A. Not the exact precise, but something similar.
Q. Something similar insofar as they also used the New York Times and the Wall Street Journal in other cases to help them identify dates?
A. Right.
Q. Now, using the event selection methodology that you used in this case, you ended up identifying some earnings announcements. Right?
A. Could I see the original report?
Q. I'm not trying to play games with you, but I don't know if I have --
MR. MARKOVITS: Did you say the event study methodology?
MR. FRANK: Event selection methodology, I think I said.
MR. MARKOVITS: For -- you're

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talking for his event study?
MR. FRANK: No. We've been talking about a z-test.
MR. MARKOVITS: Okay.
Q. And I said using the event selection methodology that you used in this case, you ended up identifying some earnings announcements. Right?
A. Well, I just want to verify. It's late in the day, and I know it's in a table in my report. I'd rather refer to my report than do it from memory.
Q. Sure.
A. I know November 20th is there. I don't recall what the other date was.
I'm looking at page 79, using the bottom of the page numbers, and it's Exhibit 5. So it's there: "Freddie Mac earnings dropped 45 percent, August 30, 2007."
Q. Right above that, two lines above, "Freddie Mac reports another quarterly loss"?
A. Right. There too.
Q. So it looks like of the dates that were selected by the event selection

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methodology that you used in this case, at least three of those dates were earnings announcement dates. Correct?
A. Correct.
Q. Now --
A. But they were picked for the screen reasons that we talked about, not because they were earnings announcements dates.
Q. Now, were those dates that had been previously tested by Dr. Holman?
A. Yes.
Q. Now, since Dr. Holman had previously selected those dates, why did you retread old ground?
A. Because they were selected by a different screen, not because they were earnings announcement dates.
Q. And Dr. Holman's screen had identified only one statistically significant day out of six. Right?
A. Well, he says two. Bajaj challenged one of them.
Q. And your approach got four dates out of nine. Is that right?

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A. I don't think they were those earnings announcement dates, were they? Let me check.

June 15th or June 14th is not significant. August 30th is.

MR. MARKOVITS: What was the question pending?

Q. The question was your approach got four dates out of nine. Is that right?

A. Correct.

Q. Two of those dates were earnings announcements dates. Is that right?

A. Yes.

Q. All right.

A. But they're identified because they were New York Times/Wall Street Journal article identified dates.

Q. And those are dates that had been tested before by Dr. Holman. Right?

A. Yes. But he arrived at testing them for a different reason.

Q. He used the approach that you traditionally used, that is, looking at earnings announcement dates. Right?

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A. That's not quite right. What I would have done is exactly -- if I were the first expert in this case, what's in the Prudential report, the deep dive on those days for his individual event study, he did an individual-event event study -- he should have done a deep dive -- to determine whether there was mixed news prior to testing them. He did the analysis of whether there was mixed news after testing them.

Q. Are you sure you wouldn't have done what you did in the Eletrobras report?

A. I'm not sure what you're referring to.

Q. Well, the Prudential report you say is a case where you used a single-event events study. Correct?

A. I found one event that was an appropriate event to test --

Q. And you've --

A. -- in the single, individual-event event study.

Q. And you've drafted literally dozens of these reports. Correct?

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A. Yes.

Q. Have you found any other reports where you only tested a single event for an event study?

A. I think we did find one, but it was, like, subject to a protective order or under seal type thing. There may have been more than one like that.

Q. Can you name that case?

A. I don't remember it, as I sit here now. But that's what I recall finding out at the office.

Q. Any cases that you can tell us about other than Prudential?

A. No. Not -- because I don't remember as I sit here now.

Q. Do you have a memory of there being other cases that aren't subject to protective order where there is a single-event event study?

A. No.

MR. FRANK: I'll pass the witness.

MR. MARKOVITS: No further questions.

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MR. FRANK: Thank you for your time.

We'll suspend the deposition pending receipt of those documents.

THE VIDEOGRAPHER: The time now is 17:20. We're off the record.

(Witness excused and deposition suspended at 5:20 p.m.)

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Signature of Deponent

SUBSCRIBED AND SWORN BEFORE ME

THIS____DAY OF____________, 2017.

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(Notary Public) MY COMMISSION EXPIRES:_______

ERRATA SHEET FOR THE TRANSCRIPT OF:
Case Name: Ohio Public Employees Retirement Systemv. Federal Home Loan Mortgage Corp.
Dep. Date: November 14, 2017
Deponent: Steven P. Feinstein, PhD, CFA

CORRECTIONS:

Pg.	Ln.	Now Reads	Should Read	Reason
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Signature of Deponent
SUBSCRIBED AND SWORN BEFORE ME
THIS____DAY OF___________, 2017.

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(Notary Public) MY COMMISSION EXPIRES:_______

C E R T I F I C A T E

I, Deanna J. Dean, a Registered Diplomate Reporter, Certified Realtime Reporter, and Massachusetts Notary Public, do hereby certify that the foregoing, to the best of my knowledge, skill and ability, is a true and accurate transcript of my computer-aided electronic stenographic notes of the deposition of STEVEN P. FEINSTEIN, PHD, CFA, who was duly sworn, taken at the place and under the circumstances present on the date hereinbefore set forth.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties to the action in which this deposition was taken, and further that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

____
Deanna J. Dean, RDR, CRR
Signed this 28th day of November, 2017
My MA commission expires December 28, 2018

I N D E X

E X H I B I T S